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NORTH AMERICA

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## THE THELEPHORACEAE OF NORTH AMERICA. XI

TULASNELLA, VELUTICEPS, MYCOBONIA, EPITHELE, and  
LACHNOCLADIUM

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### TULASNELLA

*Tulasnella* Schroeter, Krypt.-Fl. Schlesien 3: 397. 1888;  
Juel, K. Svenska Vet.-Akad. Bihang till Handl. Afd. III.  
23<sup>12</sup>: 21. 1897; Arkiv för Bot. 14<sup>1</sup>: 8. 1915; Sacc. Syll. Fung.  
14: 234. 1899.—*Prototremella* Patouillard, Jour. de Bot. 2:  
267. 1888.—*Pachysterigma* Johan-Olsen in Brefeld, Untersuch.  
Myk. 8: 5. 1889; Engl. & Prantl, Nat. Pflanzenfam. (1: 1\*\*):  
117. 1898.

Fungi with the aspect of *C. 'icium* . . .  
globose basidia but h . . .  
bears . . .

arable at maturity from the basidia which produce them are not known elsewhere in *Basidiomycetes*, so far as I am aware. Juel's material for cytological study proved to be the hymenium of a *Poria* infested by two species of *Tulasnella*. For the present, it seems less confusing in a taxonomic paper to refer to the spore-shaped organs permanently attached to the basidia in species of *Tulasnella* as sterigmata.

The specimens of *Tulasnella* which I have seen in vegetative condition were slightly colored in such colors as livid pink, dull lavender, and ecru-drab of Ridgway; specimens of all species fade to pale olive-gray in the herbarium. The spores were colored in the mass like the fructifications from which they were obtained in the cases where I secured spore falls on glass from specimens of my collection, but are hyaline under high magnification with the microscope. The fructifications are not adnate, as this term is applied to *Peniophora cinerea*, but merely very thin and tender, for when they are moistened small portions sufficiently large for crushing under a cover glass may be lifted clean from the substratum with the point of a scalpel. Such portions spread out well under the cover glass upon application of pressure and are very satisfactory for observation of the spores and sterigmata.

The species of *Tulasnella* are so similar in aspect that one has to rely upon microscopic details—chiefly of the spores and recognition of the species. Nineteen species are known, but upon such slight differences it seems probable that a revision

1. *Tulasnella Eichleriana* Bresadola, Ann. Myc. 1: 113. 1903; Sacc. Syll. Fung. 17: 209. 1905; Bourdot & Galzin, Soc. Myc. Fr. Bul. 25: 32. 1909; Juel, Arkiv för Bot. 14<sup>1</sup>: 8. 1915.

Fructification effused, thin, pale lilac, finally fading to olive-buff; in structure 20–60  $\mu$  thick, composed of interwoven, hyaline hyphae 3  $\mu$  in diameter; sterigmata 7–10  $\times$  3½–4½  $\mu$ ; spores hyaline, even, 3½–6  $\times$  3–4  $\mu$ .

Fructifications 3–6  $\times$  1–1½ cm.

On rotting wood and bark of frondose species, rarely on coniferous substrata. Canada, New Hampshire, New York, Idaho, and Washington. July to November.



Fig. 1. *T. Eichleriana*. Young basidium, *a*, beginning formation of sterigmata; older basidium, *b*, having full-grown sterigmata; collapsed basidium, *c*, with spore attached to one sterigma; sterigma, *d*, bearing a spore; spores, *s*; hypha, *h*.  $\times$  870.

*T. Eichleriana* is noteworthy by having the smallest spores and sterigmata which are known in the genus. In these details American collections agree so closely with those of European specimens of *T. Eichleriana* that one can hardly doubt their being this species although authentic specimens have not been at hand for verification.

Specimens examined:

Canada: *J. Macoun*, 21.

Ontario: Ottawa, *J. Macoun*, 13.

New Hampshire: Chocorua, *W. G. Farlow*, 1, 4, 6\*\*, and two unnumbered specimens (the last three specimens in Mo. Bot. Gard. Herb., 55270, 55276, and 55597), and Nos. A and C (in Farlow Herb.).

Massachusetts: Sharon, A. P. D. *Piguet*, B, E (in Farlow Herb.).  
New York: Ithaca, comm. by G. F. Atkinson, 2817.

Idaho: Priest River, J. R. *Weir*, 391 (in Mo. Bot. Gard. Herb., 15657).

Washington: Chehalis C. J. *Humphrey*, 6284.

2. *T. violea* (Quelet) Bourdot & Galzin, Soc. Myc. Fr. Bul. 25: 31. 1909.

*Hypochnus violeus* Quelet, Ass. Fr. Av. Sci. 1882: 401. 1883.  
—*Prototremella Tulasnei* Patouillard, Jour. de Bot. 2: 270. text f. 1-3. 1888; Essai Taxon. Hym. 27. text f. 19. 1900; Sacc. Syll. Fung. 9: 236. 1891.—*Tulasnella Tulasnei* (Patouillard) Juel, K. Svenska Vet.-Akad. Bihang till Handl. Afd. III. 23<sup>12</sup>: 21. 1897; Arkiv för Bot. 14<sup>1</sup>: 8. 1915; Sacc. Syll. Fung. 14: 234. 1899; Bresadola, Ann. Myc. 1: 114. 1903.—*T. incarnata* Bourdot & Galzin, Soc. Myc. Fr. Bul. 25: 31. 1909.—An *Corticium incarnatum* var. *pinicolum* Tulasne, Ann. Sci. Nat. Bot. V. 15: 227. pl. 10. f. 3-5. 1872?—Not *Pachysterigmata incarnata* Johan-Olsen in Brefeld, Untersuch. Myk. 8: 7. pl. 1. f. 1-2. 1889.—Not *Corticium roseolum* Karsten, Soc. pro Fauna et Fl. Fenn. Meddel. 16: 2. 1888.

Illustrations: Patouillard, loc. cit.

Type: specimens determined by Quelet in Bourdot Herb. and a fragment in Burt Herb.

Fructification effused, thin, livid pink to dull lavender, fading in the herbarium to olive-buff; in structure 30-70  $\mu$  thick, composed of interwoven hyaline hyphae 3  $\mu$  in diameter; sterigmata 7-10 $\times$ 5-6  $\mu$ , with the main portion nearly spherical; spores subglobose, even, 5-9 $\times$ 4 $\frac{1}{2}$ -6  $\mu$ .

Fructifications 1 $\frac{1}{2}$ -6 cm. long, 1-3 cm. broad.

On wood and fallen branches of frondose species, rarely on pine. New England, New York, and Washington. March to November.

This species is distinguished from *T. Eichleriana* by larger spores and sterigmata. The spores are usually about 6  $\times$  5  $\mu$ , with a slight point of attachment at the base; the body portion of the sterigma has about the same dimensions as the spores. The fructifications are too thin and tender to permit of large

portions being separated from the substratum, but they are not adnate, for upon moistening the fructification small portions large enough for preparation under a cover glass may be lifted from the substratum with the point of a scalpel.

It seems probable that *Corticium incarnatum* var. *pinicolum* Tul. must have been either the present species or *T. Eichleriana*, on account of the subglobose spores which the Tulasnes figured, although unfortunately without stating spore dimensions or scale of magnification of their figures.

Von Höhnelt & Litschauer have published<sup>1</sup> that *Corticium roseolum* Karst. is the same species as *Tulasnella Tulasnei*. I have studied an authentic specimen of *C. roseolum* communicated to me by Karsten; this species is not distinguishable in



Fig. 2. *T. violea*. Young basidium, *y*; young basidium, *a*, forming sterigmata; basidium, *b*, with nearly full-grown sterigmata; old, collapsed basidium, *c*, from whose sterigmata the spores have fallen; spores, *s*.  $\times 870$ . From specimen determined by Quelet.

coloration and aspect from several sendings of *T. Tulasnei* (= *T. violea*), also on *Betula*, received from Romell and cited below, but it is entirely different in microscopic characters. This specimen of *C. roseolum* agrees well with the description published by Karsten; its spores are hyaline, even,  $4-6 \times 3-3\frac{1}{2} \mu$ , borne 4 to a basidium on very slender sterigmata of the usual *Corticium* kind; the basidia are simple, cylindric or clavate,  $9-10 \times 4-4\frac{1}{2} \mu$ ; the hyphae are sometimes nodose-septate, and some are incrustated in the region of the substratum. Karsten's publication of *Corticium roseolum* antedates that by Massee and renders unnecessary *Corticium subroseum* Sacc. & Syd. in Sacc. Syll. Fung. 14: 223. 1899.

<sup>1</sup> K. Akad. Wiss. Wien, Sitzungsber. 115: 1557. 1906.

## Specimens examined:

Sweden: Stockholm, *L. Romell*, 125, 141, 142, 143, 149, 150, 184.

Austria-Hungary: Sonntagberg, *Strasser*, comm. by Bresadola under the name *T. incarnata*.

France: Aveyron, *A. Galzin*, comm. by H. Bourdot, 15423; Allier, *H. Bourdot*, 1798, determined by Quelet, and 3765 under the name *T. incarnata*.

New Hampshire: Chocorua, *W. G. Farlow*.

Vermont: Little Notch, Bristol, *E. A. Burt*; Middlebury, *E. A. Burt*; Chapman's Mill, Middlebury, *E. A. Burt*.

Massachusetts: Magnolia, *W. G. Farlow* (in Farlow Herb.); Sharon, *A. P. D. Piguet*, comm. by W. G. Farlow, N (in Mo. Bot. Gard. Herb., 55002); Sherborn, *H. P. Morse*, comm. by W. G. Farlow; Waltham, *W. G. Farlow* (in Farlow Herb.).

New York: East Galway, *E. A. Burt*.

Washington: Bingen, *W. N. Suksdorf*, 906.

3. *T. fusco-violacea* Bresadola, *Fungi Tridentini* 2: 98. pl. 210. f. 1. 1900; Sacc. Syll. Fung. 16: 203. 1902; Bourdot & Galzin, Soc. Myc. Fr. Bul. 25: 31. 1909; Juel, Arkiv för Bot. 14<sup>1</sup>: 8. 1915.

Illustrations: Bresadola, *Fungi Tridentini* 2: pl. 210. f. 1.

Type: authentic specimen in Burt Herb.

Fructification effused, thin, ecru-drab, fading to pale smoke-gray and pale olive-gray in the herbarium; in structure 40–60  $\mu$  thick, composed of hyaline, interwoven hyphae 4–5  $\mu$  in diameter; sterigmata 12–15  $\times$  4½–6  $\mu$ ; spores hyaline under the microscope, even, 10–15  $\times$  3–5  $\mu$ .

Fructifications 3–5 cm. in diameter.

On bark of *Abies* and sometimes of frondose species. New Hampshire to Pennsylvania. August to December. Rare.



Fig. 3. *T. fusco-violacea*. Basidium, c, with fully developed sterigmata; spores, s; hypha, h.  $\times$  870. From authentic specimen from Bresadola. One spore shows a curious projection.

*T. fusco-violacea* is distinguished from the other species hitherto found in North America by having slender and elongated, rather than subglobose, spores. Bresadola described the color of the fructification as fusco-violaceous when in vegetative condition, drying lilacinus; I have seen dried specimens only, and that from Bresadola is now pale smoke-gray.

Specimens examined:

Sweden: Femsjö, *L. Romell*, 418.

Tyrol: Cavallente, *G. Bresadola*.

New Hampshire: Crawford Notch, *L. O. Overholts*, 4883 (in Mo. Bot. Gard. Herb., 56076).

Pennsylvania: Trexlertown, *W. Herbst*, 53.

#### VELUTICEPS

*Veluticeps* Cooke emend. Patouillard, Soc. Myc. Fr. Bul. 10: 78. pl. 3. f. 1. 1894; Cooke, *Grevillea* 8: 148. 1880 (in part).—*Veluticeps* as a section of *Hymenochaete* Masee, Linn. Soc. Bot. Jour. 27: 116. 1890; not of Sacc. Syll. Fung. 6: 600. 1888.

Hymenium velvety with fascicles of colored, flexuous hyphae.

The type species is *Veluticeps Berkeleyi* Cooke, which was published originally as *Hymenochaete veluticeps* Berk. & Curtis.

The fructifications are pileate in the species best known; either dimidiate in our single Cuban species or sessile and attached by the vertex in the species occurring on the opposite side of the world in New South Wales. In both species the fascicles of colored hyphae are 800  $\mu$  or more long, about 40–60  $\mu$  in diameter, and traverse the whole or a large part of the fructification perpendicular to the surface of the hymenium, beyond which they protrude up to 40–100  $\mu$ . The colored hyphae composing the fascicles are about 4½  $\mu$  in diameter, cylindric, sometimes granule-incrusted—especially in the deeper portions of the fructification—and are closely crowded together, perhaps 20 or more to a fascicle; they have the character of the colored cystidia, which are scattered between the basidia in the hymenium of *Stereum abietinum*, *S. glaucescens*, and *S. abnormis*, rather than of the conical, pointed setae characteristic of species of *Hymenochaete*. The genera *Mycobonia* and *Epithele* are closely related to *Veluticeps* by fascicles of hyphae protruding

from the hymenium, but have the fascicles composed of hyaline hyphae.

**Veluticeps Berkeleyi** Cooke, *Grevillea* 8: 149. 1880; Patouillard, *Myc. Soc. Fr. Bul.* 10: 77. *pl. 3. f. 1.* 1894.

*Hymenochaete veluticeps* Berk. & Curtis, *Linn. Soc. Bot. Jour.* 10: 333. 1868; Sacc. *Syll. Fung.* 6: 600. 1888; Masee, *Linn. Soc. Bot. Jour.* 27: 116. 1890.

Illustrations: *Myc. Soc. Fr. Bul.* 10: *pl. 3. f. 1.*

Type: in Kew Herb. and in Curtis Herb.

Fructification dimidiate, coriaceous, hard and brittle, on the upper side brown, sulcate-zonate, velutinous, becoming glabrous; hymenium pallid cinnamon, plane, thickly studded with pro-

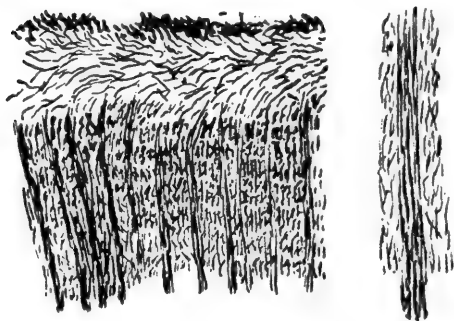


Fig. 4. *V. Berkeleyi*. Section of fructification at left, showing hyphal fascicles,  $\times 19$ ; at right, a single fascicle,  $\times 90$ .

truding fascicles of very dark hyphae; in structure 1–2 mm. thick, composed throughout of colored hyphae arranged in three layers, a broad intermediate layer of longitudinally arranged hyphae which turn upward on the upper side to form the velutinous surface layer and turn downward on the opposite side and terminate in the hymenium; bister-colored hyphal fascicles 40–60  $\mu$  in diameter, 800  $\mu$  or more long, extend

through the under layer of tawny olive subhymenial hyphae and protrude up to 40–60  $\mu$  beyond the basidia; spores not found.

On logs in woods, often on the under side. May, July. Cuba.

*V. Berkeleyi* may be recognized by its aspect of a *Hydnum* which upon close examination shows its teeth-like projections on the hymenial side to be really hyphal fascicles not covered by the hymenium. The spores were found to be ovoid and hyaline by Patouillard. Six collections of this species by C. Wright are reported by Berkeley & Curtis in *Fungi Cubenses*, from which it would seem that the species is common, but I have been able to see no more recent collections from any source. It is possible

that my correspondents have roughly classified their collections of this species as a *Hydnum* and withheld specimens of it.

Specimens examined:

Cuba: *C. Wright*, 264 (in Curtis Herb.).

In working over the species of *Aleurodiscus* which have been described, I found that the *Aleurodiscus tabacinus* Cooke should be transferred to *Veluticeps*. Although the species is extra limital and not likely to be found in North America, I now make this transfer and add the following notes on structure:

***Veluticeps tabacina* (Cooke) Burt, n. comb.**

*Aleurodiscus tabacinus* Cooke, *Grevillea* 14: 11. 1885; *Handb. Australian Fungi*, 193. 1892.—*Corticium tabacinum* (Cooke) Sacc. *Syll. Fung.* 6: 607. 1888.

Fructifications pileate, hemispherical or cup-shaped, sessile, apparently attached by the vertex, drying nearly black; in structure 800  $\mu$  thick, with a nearly black, crust-like zone on the upper side, from which a broad layer of hyaline hyphae extends to the hymenium and is traversed by brown hyphal fascicles; hymenium drying Verona brown, not covering the protruding fascicles; fascicles about 6 to a mm., 50–60  $\mu$  in diameter, up to 900  $\mu$  long, protruding up to 100  $\mu$  beyond the hymenium, composed of flexuous, colored hyphae 3  $\mu$  in diameter; basidia simple, 100 $\times$ 9–10  $\mu$ , bearing the spores on 4 slender sterigmata; spores hyaline, even, flattened on one side, 16 $\times$ 6  $\mu$ .

Fructifications 2–3 mm. in diameter, 1–1½ mm. thick.

On wood. New South Wales.

*V. tabacina* is distinct from *V. Berkeleyi* by attachment of its pileus by the center, and by its hyaline substance and sub-hymenial tissue; when a fertile specimen of *V. Berkeleyi* is available, a difference in spores may perhaps be found.

Specimens examined:

Australia: New South Wales, comm. by G. Masee (in N. Y. Bot. Gard. Herb.).

#### MYCOBONIA

*Mycobonia* Patouillard, *Myc. Soc. Fr. Bul.* 10: 76. 1894 (with diagnosis under *Bonia* Patouillard, *Myc. Soc. Fr. Bul.* 8:

48. 1892, but not *Bonia* Balansa).—*Grandinioides* Banker, Torr. Bot. Club Mem. 12: 179. 1906.

Thelephoraceous fungi having the hymenium bristling with short cylindric fascicles of hyaline hyphae which arise from the subhymenial tissue.

The type species is *Mycobonia flava*.

Patouillard intended at first that this genus should include both resupinate and pileate species; but he soon transferred the known resupinate species to *Heterochaete* on account of the longitudinally septate basidia. A few years later he introduced *Epithele* in connection with resupinate species, having hyphal fascicles like those of *Mycobonia flava*.

#### KEY TO THE SPECIES

- Fructification sessile . . . . . 1. *M. flava*  
Fructification stipitate . . . . . 2. *M. brunneoleuca*

1. ***Mycobonia flava*** (Swartz) Patouillard, Myc. Soc. Fr. Bul. 10: 76. pl. 3. f. 2. 1894; *Ibid.* 16: 180. 1900.

*Hydnum flavum* Swartz ex Berkeley, Ann. & Mag. Nat. Hist. 1. 10: 380. pl. 10. f. 8. 1842; Linn. Soc. Bot. Jour. 10: 324. 1868; Sacc. Syll. Fung. 6: 456. 1888.—*Peziza flava* Swartz, Prodr. 150. 1788; Fl. Ind. Oc. 3: 1939. 1806.—*Bonia flava* (Berk.) Patouillard in Engl. & Prantl, Nat. Pflanzenfam. (1. 1\*\*): 123. text f. 68 G–H. 1898.—*Grandinioides flavum* (Swartz) Banker, Torr. Bot. Club Mem. 12: 179. 1906.

Illustrations: Ann. & Mag. Nat. Hist. 1. 10: pl. 10. f. 8; Myc. Soc. Fr. Bul. 10: pl. 3. f. 2; Engl. & Prantl, Nat. Pflanzenfam. (1. 1\*\*): text f. 68 G–H.

Type: in British Mus. Herb. according to Berkeley, *loc. cit.*

Fructification coriaceous, convex, somewhat orbicular to reniform, sessile, attached by a point on one side, even, glabrous, drying ochraceous buff to cinnamon; hymenium ochraceous buff, with numerous short hyphal fascicles suggesting the teeth of a *Hydnum*; fascicles cylindric, 5–6 to a mm., 60–120 × 40–60  $\mu$ , composed of hyaline or subhyaline hyphae; basidia simple, clavate, 30 × 6–7½  $\mu$ ; spores hyaline, even, 10–16 × 6  $\mu$ , not seen attached to the basidia.

Fructifications 1–3 cm. long, 1½–3 cm. broad.

On fallen branches and old logs. Florida, Louisiana, Jamaica, West Indies, and Venezuela. August to November.

When examined by the naked eye or with a magnifying glass, *M. flava* is not distinguishable from a *Hydnum*, but when sections are examined with the compound microscope, the hymenium is found to be a plane surface pierced here and there by the protruding fascicles of hyphae. The spore dimensions are those of spores which were on the surface of the hymenium. A specimen in the collection from Florida has a stem 1 mm. long, but the spores are  $13 \times 6\frac{1}{2} \mu$  and other characters such that I refer the collection to *M. flava*.

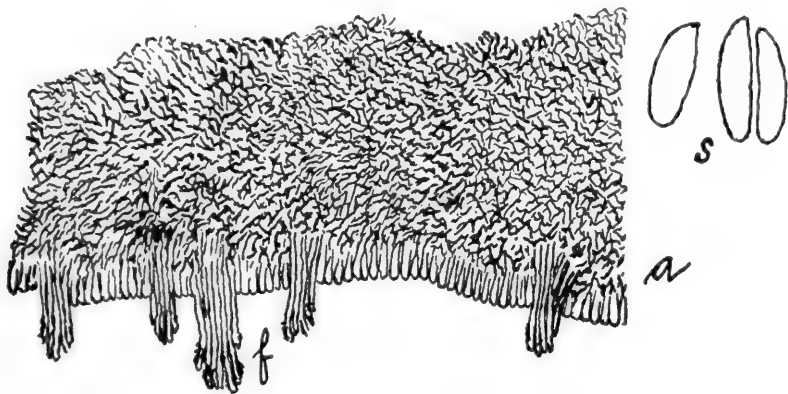


Fig. 5. *M. flava*. Section of fructification, *a*, showing hyphal fascicles, *f*,  $\times 90$ ; spores, *s*,  $\times 870$ .

#### Specimens examined:

Florida: Cocconut Grove, *R. Thaxter* (in Mo. Bot. Gard. Herb., 43985).

Louisiana: St. Martinville, *A. B. Langlois*.

Cuba: *C. Wright* (in Curtis Herb.); Guantonamo (in Weir Herb., 10849); Pinar del Rio San Diego de los Baños, *N. L. Britton*, *F. S. Earle* & *C. S. Gager*, 6823 (in N. Y. Bot. Gard. Herb., Burt Herb., and Mo. Bot. Gard. Herb., 56075); Puerto Principe, *F. S. Earle*, 312.

**2. *M. brunneoleuca*** (Berk. & Curtis) Patouillard, Myc. Soc. Fr. Bul. 16: 181. 1900; Duss, Fl. Crypt. Antilles Fr. 233. 1903.

*Hydnum brunneoleucum* Berk. & Curtis, Linn. Soc. Trans. 22: 129. 1857; Linn. Soc. Bot. Jour. 10: 325. 1868; Sacc. Syll.

Fung. 6: 457. 1888.—*Grandinioides flavum* (Swartz) Banker, Torr. Bot. Club Mem. 12: 179. 1906 (in part).

Type: in Kew Herb. and Curtis Herb.

Pileus helmet-shaped to flabelliform, vaulted, thin, yellowish brown, slightly streaked behind, glabrous; stem very short, brownish; hymenium whitish, sprinkled with many scattered strong bristles.

Pileus  $3\frac{1}{2}$ –4 cm. long, nearly as broad.

On dead wood. Martinique and Venezuela.

Patouillard has noted in the place cited that the pileus may attain a diameter of 15 cm., and that the stem is short, thick, and black at the base. Banker includes *M. brunneoleuca* in *M. flava* as a poorly developed form.

I have examined no specimens of *M. brunneoleuca*. The description of the species is that given by Berkeley & Curtis.

#### EPITHELE

*Epithele* (as a section of *Hypochnus*) Patouillard, Myc. Soc. Fr. Bul. 15: 202. 1899.—*Epithele* Patouillard, Essai Taxon. Hym. 59. 1900; Duss, Fl. Crypt. Antilles Fr. 226. 1903; v. Höhn. & Litsch. K. Akad. Wiss. Wien Sitzungsber. 115: 1595. 1906; Bourdot & Galzin, Soc. Myc. Fr. Bul. 27: 264. 1911.

Resupinate thelephoraceous fungi lacking an intermediate layer and having the hymenium bristling with short cylindric fascicles of hyaline hyphae which arise from the subhymenial tissue.

The type species is *Epithele Dussii*.

The four species of *Epithele*, known at present, are very thin and delicate in structure and constitute a natural group which is not connected with *Mycobonia* by thick resupinate species with either an intermediate layer or with a doubtful intermediate layer—doubtful merely because the hyphae are interwoven rather than arranged longitudinally in the region of the intermediate layer. *Epithele Typhae* (Pers.) Pat. is a frequent species in Europe on dead leaf bases of *Typha*; if present in the United States, it may have been regarded as one of the *Hydnaceae* on account of the hyphal fascicles in the hymenium.

## KEY TO THE SPECIES

- Fructification elliptical, white; spores  $6-7 \times 2\frac{1}{2}-3 \mu$ ; on tree fern . . . . . 1. *E. Dussii*  
 Fructification interruptedly effused, sulphur-yellow; spores  $9-12 \times 7-9 \mu$ ; on  
 palmetto . . . . . 2. *E. sulphurea*

1. ***Epithele Dussii*** Patouillard, Essai Taxon. Hym. 59. 1900; Duss, Fl. Crypt. Antilles Fr. 226. 1903.

*Hypochnus Dussii* Patouillard, Myc. Soc. Fr. Bul. 15: 202. 1899; Sacc. Syll. Fung. 16: 197. 1902.—*Peniophora Dussii* (Patouillard) v. Höhn. & Litsch. K. Akad. Wiss. Wien Sitzungsber. 116: 749. text f. 2. 1907.

Fructification resupinate, very thin, strongly adhering, forming a coating well defined, white or whitish,  $3-15 \times 3-4$  mm.; fascicles very numerous, erect, white,  $20-25 \mu$  in diameter, protruding up to  $100 \mu$ , composed of hyphae; basidia 2- or 4-spored,  $13 \times 6 \mu$ ; spores hyaline, even, attenuated towards the apex,  $6-7 \times 2\frac{1}{2}-3 \mu$ ; layer between hymenium and substratum about  $20 \mu$  thick.

On dead trunks of tree ferns. Guadeloupe and Venezuela.

The type, which I have not seen, was collected on the dead trunk of *Alsophila aspera*. The collection from Venezuela, cited below, although lacking spores, has the characteristic hyphal fascicles of *Epithele Dussii* and agrees well with Patouillard's description except in being broadly effused. This specimen is 10 cm. long,  $1\frac{1}{2}$  cm. wide, and broken off with the substratum along one side and at both ends; hence the fructifications probably become long and widely effused.

Specimens examined:

Venezuela: Mt. El Val, A. F. Blakeslee, J2, comm. by W. G. Farlow (in Mo. Bot. Gard. Herb., 13614).

2. ***E. sulphurea*** Burt, n. sp.

Type: in Farlow Herb. and Mo. Bot. Gard. Herb.

Fructifications resupinate, interruptedly effused, drying pale sulphur-yellow to marguerite-yellow; in structure  $300 \mu$  thick, composed of loosely interwoven, thick-walled, hyaline hyphae  $2-3 \mu$  in diameter; fascicles about 9 to a mm.,  $15-30 \mu$  in diameter, protruding up to  $100 \mu$ , composed of hyaline hyphae; basidia

simple, 8–10  $\mu$  in diameter, 4-spored; spores hyaline, even, 9–12  $\times$  7–9  $\mu$ .

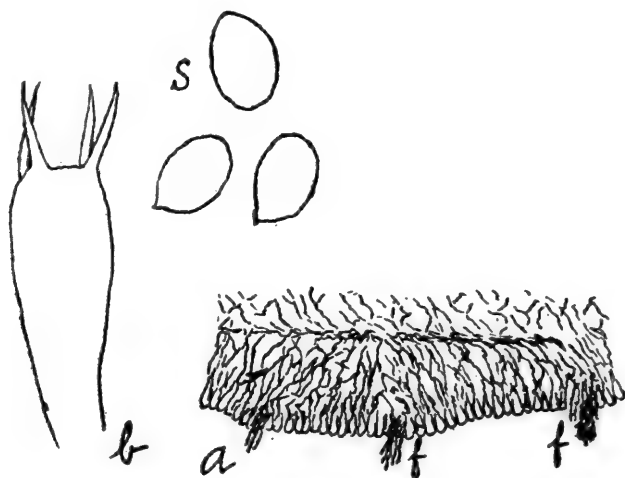


Fig. 6. *E. sulphurea*. Section of fructification, a, showing hyphal fascicles, f,  $\times$  19; basidium, b, and spores, s,  $\times$  650.

On palmetto. Florida. Autumn.

*E. sulphurea* is noteworthy by its greenish yellow color and spores much larger than those of other species of this genus. Collections of this species are likely to be included in *Hydnum* or *Odontia*, unless examination of sectional preparations is made with the microscope to show that teeth covered by the hymenium are not present.

Specimens examined:

Florida: Palm Beach, *R. Thaxter*, 52, type (in Farlow Herb. and in Mo. Bot. Gard. Herb., 43940).

#### LACHNOCLADIUM

*Lachnocladium* Lévillé in d'Orbigny, Dict. Hist. Nat. 8: 487. 1846; Morgan, Cincinnati Soc. Nat. Hist. Jour. 10: 192. 1888; Sacc. Syll. Fung. 6: 738. 1888; Patouillard, Jour. de Bot. 3: 23. pl. 1. 1889; Engl. & Prantl, Nat. Pflanzenfam. (1: 1\*\*): 137. 1898.—*Eriocladus* Lévillé, Ann. Sci. Nat. Bot. III. 5: 158. 1846, but not of Lindley.

Fructifications coriaceous or somewhat coriaceous, branched, tomentose; branches compressed or terete; coralloid fungi growing on wood or on the ground.

This genus was founded upon a group of seven species, of which none was designated as the type species.

The distinctive characters of *Lachnocladium* are coriaceous consistency and more or less hairy covering of fructifications; by these characters the genus is distinguished from *Clavaria*. At the time of publication of *Lachnocladium* under the name *Eriocladus*, as first proposed, L  veill   restricted the Persoonian genus *Merisma* to glabrous, coriaceous, branched species of the *Clavariaceae*. He had *Clavaria* include fleshy species only, *Merisma*, the glabrous coriaceous species, and *Lachnocladium*, tomentose species so tomentose that the branches were tomentose. Mycologists have not accepted *Merisma* as understood by L  veill  ; they have transferred to *Pterula* most of the species which L  veill   had in *Merisma*, and have by their usage modified the idea of *Lachnocladium* by publishing as members of this genus many species which do not have their branches tomentose but differ from branched species of *Clavaria* by being coriaceous.

*Lachnocladium* comprises a series of species parallel with *Clavaria*; some of the species have hyaline spores, others have more or less ochraceous spores, some, even spores, and some, rough-walled to aculeate spores. Species with dark-colored, more or less rough-walled to muricate spores are better referable to *Thelephora*.

L  veill   regarded *Lachnocladium* as one of the *Clavariaceae* and the genus is located there in Saccardo's 'Sylloge Fungorum' and by Hennings in Engler & Prantl's 'Nat. Pflanzenfam.' Berkeley & Curtis arranged the species of *Lachnocladium* between those of *Thelephora* and *Stereum* in their 'Notices of North American Fungi'<sup>1</sup> and 'Fungi Cubenses.'<sup>2</sup> Patouillard includes *Lachnocladium* in his series of *Thelephores*. In North America there are no species connecting, or intermediate between, *Lachnocladium* and *Thelephora*. While I have had no opportunity to study the various exotic species with dark-colored, echinulate spores which have been published as *Lachnocladium*, it seems very probable that the transfer of such species to *Thelephora* near *Thelephora anthocephala* would

<sup>1</sup> Grevillea 1: 161. 1873.

<sup>2</sup> Linn. Soc. Bot. Jour. 10: 330. 1868.

leave the remaining species of *Lachnocladium* clearly in the *Clavariaceae*.

I include *Lachnocladium* for reference by students of the *Thelephoraceae* because some authors have regarded it as a member of the latter family.

Collectors' field notes on whether the species are coriaceous or fleshy at the time of collecting are necessary for sharply separating *Lachnocladium* and *Clavaria*, for it is evident that these characters may not be well shown in the case of dried specimens of some species.

### KEY TO THE SPECIES

- Spores hyaline . . . . . 1
- Spores more or less ochraceous . . . . . 4
- Spores dark-colored; in Guadeloupe . . . . . 11. *L. guadelupense*
- 1. Spores ovoid or cylindric . . . . . 2
- 1. Spores subglobose . . . . . 3
  - 2. Spores even,  $3-4\frac{1}{2} \times 2-2\frac{1}{2}$   $\mu$ ; radiately branched organs like those of *Asterostroma* present; Cuba to Brazil . . . . . 1. *L. brasiliense*
  - 2. Spores even,  $9 \times 6$   $\mu$ ; fructification somewhat cartilaginous; in Cuba . . . . . 2. *L. cartilagineum*
  - 2. Spores even,  $6-12 \times 3-3\frac{1}{2}$   $\mu$ ; fructification dry,  $2\frac{1}{2}-4$  cm. high; on rotting leaves, Vermont to Ohio . . . . . 3. *L. Micheneri*
  - 2. Spores even,  $12-15 \times 5-6$   $\mu$ ; fructification 3-4 cm. high, everywhere clothed with whitish down; in Pennsylvania . . . . . 4. *L. semivestitum*
  - 2. Spores  $7-10 \times 2\frac{1}{2}-4\frac{1}{2}$   $\mu$ ; fructifications 8 cm. high; on wood; Connecticut . . . . . 12. *L. odoratum*
- 3. Spores even,  $3-3\frac{1}{2} \times 2\frac{1}{2}-3$   $\mu$ ; fructification  $2\frac{1}{2}$  cm. high; on the ground, New Jersey and Pennsylvania . . . . . 5. *L. subsimile*
- 3. Spores even,  $3\frac{1}{4}-4\frac{1}{2}$   $\mu$  in diameter; fructification 4 cm. high; on wood, Cuba . . . . . 6. *L. cervinum*
- 3. Spores even,  $9\frac{1}{2} \times 8-9$   $\mu$ ; on the ground, New Hampshire, Massachusetts, and New York . . . . . 7. *L. bicolor*
- 4. Spores even,  $7-12 \times 4\frac{1}{2}-6$   $\mu$ ; fructification velvety, ochraceous-ferruginous, 7-12 cm. high; on rotten wood, South America . . . . . 8. *L. furcellatum*
- 4. Spores even,  $6-7 \times 3-3\frac{1}{2}$   $\mu$ ; fructification drying drab, clothed with a gray down, 8 cm. high; on wood, West Virginia . . . . . 9. *L. erectum*
- 4. Spores even,  $9-10 \times 4\frac{1}{2}-5\frac{1}{2}$   $\mu$ ; stem 1 cm. in diameter; branch portion 6-7 cm. high, 5-6 cm. broad; North Carolina . . . . . 10. *L. Atkinsonii*

**1. *Lachnocladium brasiliense* Léveillé, Ann. Sci. Nat. Bot.**

**III. 5: 159. 1846 (*Eriocladus*); Berk. & Curtis, Linn. Soc. Bot. Jour. 10: 330. 1868; Sacc. Syll. Fung. 6: 738. 1888; Patouillard, Jour. de Bot. 3: 26. pl. 1. f. 5. 1889. Plate 5, fig. 1.**

Illustrations: Patouillard, *loc. cit.*

Type: stated by L  veill   to be in De Candolle Herb.; Patouillard notes a specimen of original locality and collector—Bahia, *Blanchet*—in Museum of Paris Herb.

Fructification very short-stipitate, most highly branched, coriaceous, drying to tawny olive; branches solid, terete, dichotomous, with slender acute tips; spores hyaline, even,  $3-4\frac{1}{2} \times 2-2\frac{1}{2} \mu$ , borne on simple basidia; underneath the hymenium radiately branched organs like those of *Asterostroma*, pale-colored, with slender, flexuous rays up to  $30 \times 3 \mu$ , are abundant



Fig. 7. *L. brasiliense*. Antler-shaped and star-shaped organs, *a*; spores, *s*.  $\times 870$ .

and form the outer part of the medullary part of the branches and the somewhat spongy outer surface of the fructification where the hymenium is absent.

Fructifications 3–5 cm. high, about 3 cm. in diameter.

On rotting wood. Cuba to Brazil.

*L. brasiliense* is distinguished by its small, hyaline spores and by the brownish, antler-shaped and star-shaped organs, the latter suggestive of those of *Asterostroma*, which are abundant underneath the hymenium and form the sterile surface elsewhere.

Specimens examined:

Cuba: *C. Wright* (in Curtis Herb., under the name *Thelephora brasiliensis* L  v.); *C. Wright*, 831, under the name *Lachnocladium furcellatum* (in Curtis Herb. and in Mo. Bot. Gard. Herb., 43838).

2. *L. cartilagineum* Berk. & Curtis, Linn. Soc. Bot. Jour. 10: 330. 1868; Sacc. Syll. Fung. 6: 739. 1888; Patouillard, Jour. de Bot. 3: 26. pl. 1. f. 4. 1889. Plate 5, fig. 2.

Illustrations: Patouillard, *loc. cit.*

Type: in Kew Herb. and Curtis Herb.

Fructifications somewhat cartilaginous, erect, drying honey-yellow to olive-brown, densely and repeatedly branched above; branches cylindric, very sharp-pointed; stem slender, cylindric, strigose-hairy at the base; spores hyaline, even,  $9 \times 6 \mu$ , slightly flattened on one side, apiculate.



Fig. 8.

*L. cartilagineum*.  
Spores,  $\times 870$ .

Fructifications 4 cm. high,  $1-2\frac{1}{2}$  cm. in diameter; stem  $1\frac{1}{2}-2$  cm. long,  $1\frac{1}{2}-2$  mm. in diameter.

On the ground. October. Cuba.

Patouillard has noted the spores of this species as ochraceous and a little smaller than I find them. The spores are very abundant in preparations from the type specimen, but the basidia are not well enough preserved to demonstrate whether simple or longitudinally cruciately septate.

Specimens examined:

Cuba: *C. Wright*, 204, type (in Curtis Herb.).

**3. *L. Micheneri*** Berk. & Curtis, *Grevillea* 1: 161. 1873; Morgan, *Cincinnati Soc. Nat. Hist. Jour.* 10: 192. 1888; Sacc. *Syll. Fung.* 6: 739. 1888; Hard, *Mushrooms*, 476. *text f.* 401. 1908.

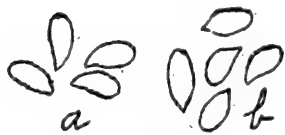
Plate 5, fig. 3.

*Clavaria fragrans* Ell. & Ev. *N. Am. Fungi*, 2023. 1888. See Cooke, *Grevillea* 17: 59. 1889.—An *Lachnocladium odoratum* Atkinson, *Ann. Myc.* 6: 58; 1908?

Illustrations: Hard, *Mushrooms*, *text f.* 401.

Type: in Kew Herb. and Curtis Herb.

Fructifications gregarious, coriaceous, dry, repeatedly forked and branched and drying drab-gray above; stem cylindric, light buff, tomentose below, arising singly or in a few individuals from more or less effused, mycelial patches on decaying leaves; smaller branches filiform, flexuous, with paler tips; irregular, tomentose patches at various places on main trunk, branches, or axils of branches where hymenium has failed to develop; hymenium glabrous, no cystidia nor hairs present; spores hyaline, even,  $6-12 \times 3-3\frac{1}{2} \mu$ .

Fig. 9. *L. Micheneri*.

Spores,  $\times 87$ ; a, from type;  
b, from Burt coll.

Fructifications  $2\frac{1}{2}$ –4 cm. high,  $1-1\frac{1}{2}$  cm. broad; main stem 2–3 mm. in diameter.

On rotting leaves in groves. Canada to New Jersey and westward to Missouri.

This species forms an orbicular, villose or mycelial patch on the surface of leaves—very often beech leaves—and from these patches arise one or two stems, which are tomentose below. In the field notes of this species I have the record, "bitter to taste," but the dried specimens are not bitter now.

Specimens examined:

Exsiccati: Ell. & Ev., N. Am. Fungi, 2023, type distribution of *Clavaria fragrans*; Ell. & Ev., Fungi Col., 1022.

Canada: Ontario, London, J. Dearness, in Ell. & Ev., Fungi Col., 1022.

Vermont: Newfane, C. D. Howe; Sudbury, E. A. Burt.

New York: Snyders, C. H. Peck (in N. Y. State Mus. Herb. and in Mo. Bot. Gard. Herb., 56113).

New Jersey: Newfield, J. B. Ellis, in Ell. & Ev., N. Am. Fungi, 2023.

Pennsylvania: E. Michener, 479, type (in Curtis Herb., 3534); Bethlehem, Schweinitz, the *Clavaria crispula* and *C. byssiseda* of Schweinitz, Syn. N. Am. Fungi, 1024 and 1034 respectively (in Herb. Schweinitz).

Ohio: C. G. Lloyd, 3817 (in Lloyd Herb., Burt Herb., Farlow Herb., and Mo. Bot. Gard. Herb., 44653); Oxford, L. O. Overholts, 1487 (in Overholts Herb.).

Missouri: Wickes, E. A. Burt (in Mo. Bot. Gard. Herb., 43813.)

**4. *L. semivestitum*** Berk. & Curtis, Grevillea 1: 161. 1873; Morgan, Cincinnati Soc. Nat. Hist. Jour. 10: 192. 1888; Sacc. Syll. Fung. 6: 739. 1888. Plate 5, fig. 4.

Type: in Kew Herb. and Curtis Herb.

Fructifications coriaceous, erect, repeatedly furcate-branched, the branches terete, rather straight, rising rather close together, everywhere clothed with whitish down except on the final branchlets, drying between light brownish olive and buffy brown; spores of the type hyaline, even,  $12-15 \times 5-6 \mu$ .

Fructifications 3–4 cm. high, about 1 cm. in diameter across branches.

On the ground. Pennsylvania.

The fructifications of *L. semivestitum* probably occur solitary or gregarious on the ground. Distinguishing characters are slender, erect habit of growth, appressed branches, and large, hyaline, even spores. In the dried specimen the branches are pruinose rather than hairy. Cooke referred to *L. semivestitum* the specimens distributed by Ell. & Ev., N. Am. Fungi, 2024, under the name *Clavaria velutina* Ell. & Ev. without description, and Ellis & Everhart distributed in Fungi Col., 808, under the name *L. semivestitum* specimens growing on rotten wood in West Virginia, but neither of these distributions can be *L. semivestitum*, for their spores are much too small.



Fig. 10.  
*L. semivestitum*.  
Spores,  $\times 870$ ;  
from type.

Specimens examined:

Pennsylvania: *E. Michener*, 1184, type (in Curtis Herb., 4260).

**5. *L. subsimile* Berk.** *Grevillea* 1: 161. 1873; Sacc. Syll. Fung. 6: 739. 1888. Plate 5, fig. 5.

Type: in Kew Herb. and Curtis Herb.

Fructifications coriaceous, slender, delicately and repeatedly dichotomously branched, minutely tomentose except on the branchlets, drying between light brownish olive and buffy brown; spores hyaline, even,  $3-3\frac{1}{2} \times 2\frac{1}{2}-3 \mu$ .



Fig. 11.  
*L. subsimile*.  
Spores,  $\times 870$ ; a,  
from type; b, from  
Michener specimen  
in Mo. Bot. Gard.  
Herb.

Fructification  $2\frac{1}{2}$  cm. high,  $\frac{1}{2}$  cm. in diameter.  
On ground in woods. New Jersey and Pennsylvania. September.

*L. subsimile* in its dried condition has coloration and general aspect very like *L. semivestitum* but the branches of the former curve rather more apart at the axils and are not as closely appressed above. Only three spores were found in a preparation from the specimen in Curtis Herb., which may be rather immature; these spores are very small in comparison with those of *L. semivestitum*. The specimen distributed in Ell. & Ev., N. Am. Fungi, 2024, under the name *Clavaria velutina* E. & E., without description, and the collection from Pennsylvania, both

of which are cited below as *L. subsimile*, have their spores somewhat rough and may be specifically distinct from this species. Nevertheless I am inclined to regard both collections as the fully mature *L. subsimile*. The type of *L. subsimile* was published as Curtis Herb. No. 4600, which appears to be an error for 4690, the number borne by the specimen to which other data point as the specimen referred to by the description. Ellis notes for his distribution, "Milk white when fresh. Spores white."

Specimens examined:

Exsiccati: Ell. & Ev., N. Am. Fungi, 2024, under the name *Clavaria velutina*.

New Jersey: *Laning*, 49, probable type (in Curtis Herb., 4690);

Newfield, *J. B. Ellis*, in Ell. & Ev., N. Am. Fungi, 2024.

Pennsylvania: *E. Michener* (in Mo. Bot. Gard. Herb., 56077).

**6. *L. cervinum*** (Berk. & Curtis) Patouillard, Jour. de Bot. **3**: 26. 1888. Plate 5, fig. 9.

*Clavaria cervina* Berk. & Curtis, Linn. Soc. Bot. Jour. **10**: 338. 1868; Sacc. Syll. Fung. **6**: 716. 1888.—*Clavaria pallida* Berk. & Curtis, Linn. Soc. Bot. Jour. **10**: 338. 1868; Sacc. Syll. Fung. **6**: 714. 1888.—*Lachnocladium pallidum* (Berk. & Curtis) Patouillard, Jour. de Bot. **3**: 26. 1888.

Type: in Kew Herb. and Curtis Herb.

Fructifications coriaceous, branched, becoming tawny olive in the herbarium, hairy with hyaline, thin-walled hairs  $1\frac{1}{2} \mu$  in diameter which protrude  $10 \mu$  beyond the basidia and are longer on the stem; branches repeatedly forked, slender, with very acute tips; spores hyaline, even, subglobose,  $3\frac{3}{4}$ – $4\frac{1}{2} \mu$ .

Fructifications 4 cm. high.

On dead wood. Cuba. July.

The type of *C. pallida* is a little more densely branched than that of *C. cervina*, but the specimens are so similar in other respects that they can hardly be regarded as different species. Patouillard published the spores as pale ochraceous, but I find them hyaline as seen with the microscope.

Specimens examined:

Cuba: *C. Wright*, 235, type (in Curtis Herb.); *C. Wright*, 256, type of *Clavaria pallida* (in Curtis Herb.).



Fig. 12.  
*L. cervinum*.  
Spores,  $\times 870$ .

**7. *L. bicolor*** (Peck) Burt, n. comb.

Plate 5, fig. 6.

*Clavaria bicolor* Peck, N. Y. State Mus. Bul. **54**: 954. 1902.  
 Not *C. bicolor* Massee, Kew Bul. **1901**: 154. 1901.—*C. Peckii*  
 Sacc. & D. Sacc. in Sacc. Syll. Fung. **17**: 196. 1905.—*C. vestipes*  
 Peck, N. Y. State Mus. Bul. **116**: 35. 1907.

Type: in N. Y. State Mus. Herb.

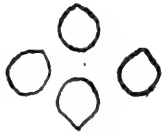


Fig. 13.  
*L. bicolor*.  
 Spores,  $\times 870$ .

Fructifications small, 2–2½ cm. high, gregarious; stem slender, 1–2 mm. thick, straight or flexuous, solid, tomentose, pale yellow, divided above into two or more short, orange-colored, compressed branches which are themselves once or twice dichotomously divided; tips acute, concolorous.

Under pine trees. New Hampshire, Massachusetts, and New York. August and September.

The specimens which I have referred to this species are larger in the Massachusetts collection and range from 2½ to 5 cm. high; towards the base the stem is hirsute-tomentose and has dried tawny olive, honey-yellow in the upper portions; the basidia are  $45 \times 8 \mu$ , with two sterigmata; and the spores are hyaline, even, subglobose,  $9\frac{1}{2} \times 8-9 \mu$ . Verification by comparison with the type was overlooked.

Specimens examined:

New Hampshire: Chocorua, *W. G. Farlow* (in Farlow Herb.).

Massachusetts: Coolidge Point, Magnolia, *W. G. Farlow*.

**8. *L. furcellatum*** (Fries) L  veill  , as understood by Patouillard, Jour. de Bot. **3**: 26. pl. 1. f. 3. 1889; L  veill  , Ann. Sci. Nat. Bot. III. **5**: 159. 1846 (*Eriocladus*); Sacc. Syll. Fung. **6**: 738. 1888; Not of Berk. & Curtis, Linn. Soc. Bot. Jour. **10**: 330. 1868.

Plate 5, fig. 7.

*Clavaria furcellata* Fries, Linnaea **5**: 531. 1830; Epicr. 576. 1838.

Illustrations: Plumier, Filic. Am. pl. 168. f. L. 1705; Patouillard, Jour. de Bot. **3**: pl. 1. f. 3. 1889.

Fructifications ascending, somewhat ferruginous, with branches solid, repeatedly dichotomous, distant, rather tough, velvety, acuminate.

Fructifications 7–12 cm. high, pallid ferruginous to ochraceous ferruginous. On rotting wood.

The original description, of which the above is a translation, was based upon collections from Guiana by Roxburgh and Brazil by Beyrich, with reference to the same species of a collection from Bourbon Island by Bory, which differed from the South American specimens by decumbent habit, etc.

At the time of publication of *L. furcellatum*, Fries gave only characters sufficient to distinguish this species from an earlier species, *L. tubulosum*, occurring in the same region and having hollow branches. In the course of time several species of



Fig. 14. *L. furcellatum*. Portion of hymenium showing basidia and a hair, *a*; spores, *s*.  $\times 870$ . From Colombia coll.

South American *Lachnocladium* with solid stems have been recognized, but I have so far failed to find any study upon the original specimens of *Clavaria furcellata* Fries—if these specimens still exist—which gives their microscopical characters and will decide whether *L. furcellatum* as understood by Patouillard or some other *Lachnocladium* with solid branches, is the true *L. furcellatum* (Fries) Lév. The collection from Santa Marta, Colombia, by C. F. Baker, which he distributed under the name *L. brasiliense* upon my determination, I now regard as agreeing more closely with the original description of *L. furcellatum* than

other specimens which I have seen and it has the additional characters published for *L. furcellatum* by Patouillard.

These specimens are tough and certainly coriaceous rather than fleshy, have dried hair-brown below, with final branchlets pinkish buff, everywhere hairy with weak, hyaline hairs  $1\ \mu$  in diameter, which protrude beyond the basidia except along the tips of the branchlets; spores becoming pale ochraceous, even,  $7-12 \times 4\frac{1}{2}-6\ \mu$ , apiculate.

The specimens of *L. furcellatum* of Berk. & Curtis, Fungi Cubenses, are of two species. That collected in Cuba by C. Wright, 831, is *L. brasiliense*; the other by C. Wright, 839, has small hyaline, even spores  $3-4 \times 3\ \mu$  but lacks the radiately branched organs characteristic of *L. brasiliense*.

Specimens examined:

Colombia: Bonda, C. F. Baker, 14, distributed under the name *Lachnocladium brasiliense*.

**9. *L. erectum* Burt, n. sp.**

Plate 5, fig. 8.

Type: in Ell. & Ev., Fungi Col., 808, copy in Burt Herb.

Fructifications of the type arise in a cluster of three from a common point, soon repeatedly dichotomously branched, with branches erect, close together, coriaceous, compressed, drying drab, clothed with a gray down whose hyphae are  $50-200\ \mu$  long; fertile tips of the branches cylindric, flexuous, solid,  $\frac{1}{2}-1\ \text{cm.}$  long, bearing the hymenium on all sides; spores very pale yellowish under the microscope, even,  $6-7 \times 3-3\frac{1}{2}\ \mu$ .



Fig. 15.  
*L. erectum*.  
Spores,  $\times 870$ .

Cluster of fructifications 8 cm. high,  $2\frac{1}{2}\ \text{cm.}$  in diameter in the branched portion; individual stems 1 cm. high, about 2 mm. in diameter; branches about 1 mm. in diameter.

On rotten frondose wood. West Virginia. September.

*L. erectum* may be distinguished from the other species of its genus in the eastern United States by occurrence on a woody substratum, by its slender, erect habit of growth and appressed branches, by the soft, downy pubescence of weak hyaline hyphae which stand out at right angles from the stem and branches, and by the small, oblong, apparently slightly colored spores.

## Specimens examined:

Exsiccati: Ell. & Ev., Fungi Col., 808, type distribution under the name *Lachnocladium semivestitum*.

West Virginia: Nuttallburg, *L. W. Nuttall*, in Ell. & Ev., Fungi Col., 808.

**10. *L. Atkinsonii*** Bresadola in Atkinson, Jour. Myc. **8**: 119. 1902; Sacc. Syll. Fung. **17**: 198. 1905.

Type: in Cornell Univ. Herb., 4216.

Fructifications somewhat coriaceous; stem elongated, compressed-canaliculate, pallid, tomentose, 5–6 cm. long, 1 cm. thick, somewhat quadrifid at the apex; branches compressed, sulcate, repeatedly verticillate-, or dichotomo-, divided, tomentose on the sterile side, lurid ochraceous; branchlets somewhat terete, furcate at the apex, straw-yellow; spores hyaline or somewhat straw-colored, even, amygdaliform-oblong or somewhat cylindric,  $9-10 \times 4\frac{1}{2}-5\frac{1}{2} \mu$ ; basidia clavate.

Dimensions of the branched portion 6–7 cm. high, 5–6 cm. broad. Blowing Rock, North Carolina. August.

A beautiful species approaching the *Clavariae* but included in *Lachnocladium* on account of having the hymenium unilateral and the stem evidently somewhat waxy.

The above is a translation of the original description of this species of which I have seen no specimens.

**11. *L. guadelupense*** (Léveillé) Patouillard, Jour. de Bot. **3**: 33. pl. 1. f. 7. 1889.

*Merisma guadelupense* Léveillé, Ann. Sci. Nat. Bot. III. **5**: 157. 1846.—*Pterula guadalupensis* (Léveillé) Sacc. Syll. Fung. **6**: 742. 1888.

Illustration: Patouillard, *loc. cit.*

Type: in Museum of Paris Herb., according to Léveillé.

Fructification with very short stem, coriaceous, branched; branches very thin, elongated, fastigate, compressed, dichotomous, becoming fuscous; terminal branchlets very short, naked, acute; spores brown, warted, apiculate at base,  $12 \times 6 \mu$ .

Stem hardly 1 cm. long.

Guadeloupe.

The above description is a translation of the original description with addition of the spore characters as given by Patouillard. Perhaps the species could be transferred to *Thelephora* with advantage on account of the dark spores; I have seen no specimens. Bresadola includes this species in *Pterula*, in Ann. Myc. 14: 233. 1916, and gives *Pterula aurantiaca* P. Henn. and *P. squarrosa* P. Henn. as synonyms.

12. *L. odoratum* Atkinson, Ann. Myc. 6: 58. 1908; Sacc. Syll. Fung. 21: 436. 1912.

Type: in Cornell Univ. Herb., 18618.

"Plants 8 cm. high, bases clustered and covered with white mycelium, branches yellowish or grayish, becoming brownish where bruised, branching several times dichotomously, ultimate branches tapering, branched at very tip to make short acute points, branches faintly tinged lemon-yellow, brownish red at very tip, all of larger branches suffused with a reddish tinge, and here and there laterally tomentose, and sterile. Spores transparent,  $7-10 \times 3\frac{1}{2}-4\frac{1}{2} \mu$ .

"C. U. Herb., No. 18618, growing on very much decayed wood, showing long white cords of mycelium. Connecticut, E. A. White."

The above is the original description. I have seen no authentic specimens but think that they should be compared with *L. Micheneri* and *L. erectum*.

#### EXCLUDED SPECIES

*Pterula setosa* Peck, N. Y. State Mus. Rept. 27: 105. 1875, was transferred to *Lachnocladium* by Sacc. Syll. Fung. 6: 740. 1888. Patouillard in Jour. de Bot. 3: 35. 1888, excluded this species from *Lachnocladium*, because its hairiness is due to the elongated sterigmata of the basidia.

(To be continued.)



## EXPLANATION OF PLATE

## PLATE 5

The figures of this plate have been reproduced natural size from dried herbarium specimens.

Fig. 1. *Lachnocladium brasiliense*. Collected in Cuba by C. Wright, in Curtis Herb.

Fig. 2. *L. cartilagineum*. From the type in Curtis Herb., collected in Cuba by C. Wright, 204.

Fig. 3. *L. Micheneri*. Collected at Newfane, Vermont, by C. D. Howe.

Fig. 4. *L. semivestitum*. From the type in Curtis Herb., collected in Pennsylvania by E. Michener, 1184.

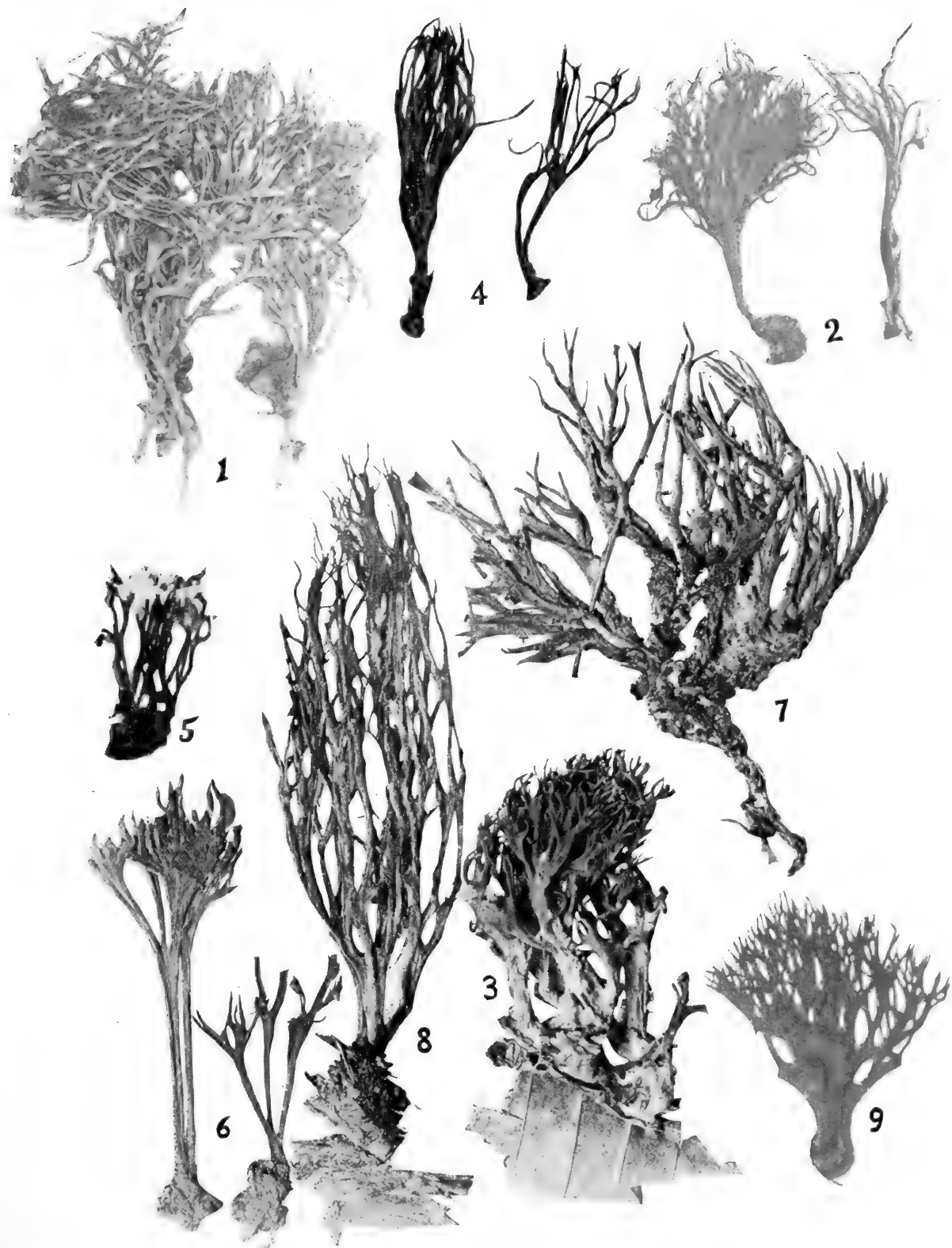
Fig. 5. *L. subsimile*. From the type in Curtis Herb., collected in New Jersey by Laning, 49.

Fig. 6. *L. bicolor*. Collected at Magnolia, Massachusetts, by W. G. Farlow.

Fig. 7. *L. furcellatum*. Collected at Bonda, Colombia, by C. F. Baker, 14.

Fig. 8. *L. erectum*. From the type in Burt Herb., collected at Nuttallburg, West Virginia, by L. W. Nuttall.

Fig. 9. *L. cervinum*. From the type of *Clavaria pallida* in Curtis Herb., collected in Cuba by C. Wright, 256.



BURT—THELEPHORACEAE OF NORTH AMERICA

1. LACHNOCLADIUM BRASILIENSE.—2. L. CARTILAGINEUM.—3. L. MICHENERI.—  
4. L. SEMIVESTITUM.—5. L. SUBSIMILE.—6. L. BICOLOR.—7. L. FURCELLATUM.—  
8. L. ERECTUM.—9. L. CERVINUM.







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## THE THELEPHORACEAE OF NORTH AMERICA. XII<sup>1</sup>

### STEREUM

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### STEREUM

*Stereum* Persoon, Roemer Neues Mag. Bot. 1:110. 1794; Obs. Myc. 1:35. 1797, and 2:90. 1799; Fries, Obs. Myc. 1:274. 1815, Gen. Hym. 14. 1836, Epicr. 545. 1838; Hym. Eur. 638. 1874; Berkeley, Brit. Fung. 270. 1860; Morgan, Cincinnati Soc. Nat. Hist. Jour. 10:193. 1888; Sacc. Syll. Fung. 6:551. 1888; Masee, Linn. Soc. Bot. Jour. 27:158. 1890; Engl. & Prantl, Nat. Pflanzenfam. (1:1\*\*): 123. 1898.—*B. Sterea* of *Thelephora*, Schweinitz, Naturforsch. Ges. Leipzig Schrift. 1:105. 1822.—\*\*\*\**Stereum* of *Thelephora*, Persoon, Myc. Eur. 1:116. 1822.—Includes *Podoscypha* Patouillard in Duss, Fl. Crypt. Antilles Fr. 230. 1904.—Includes *Lloydella* Bresadola in Lloyd, Myc. Writ. 1. Myc. Notes 6:51. 1901; Sacc. Syll. Fung. 16:1116. 1902.—Includes *Bresadolina* Brinkmann, Ann. Myc. 7:289. 1909.

Fructifications coriaceous to hard, stipitate, dimidiate or effuso-reflexed; hymenium inferior, not containing setae; intermediate layer of longitudinally arranged hyphae normally present; basidia simple; spores white, even—rough in but few instances.

The species mentioned or described as belonging in *Stereum*

<sup>1</sup> Issued Dec. 8, 1920.

upon its publication are *Stereum hirsutum*, *S. striatum*, *S. purpureum*, *S. nitidum*, and *S. rugosum*, no one of which was designated as the type species.

The species of *Stereum* are here arranged in the usual sections of central-stemmed, lateral-stemmed, merismatoid, and dimidiate and effuso-reflexed species; these sections are convenient for locating species approximately, but one should bear in mind that some species are ambiguous with regard to sectional characters; all the species are probably so variable that individuals may be selected from most gatherings which will prove very misleading for study. For example, *Stereum fasciatum* is properly included in the section of effuso-reflexed species, yet fructifications of this species do occur now and then with elongation of the umbo so great as to lead one to regard such a fructification as lateral-stemmed.

While *Stereum* is a large genus in the number of its North American species, its difficulty is not proportional to the number of species, for the species of each of its several sections differ among themselves microscopically in the absence or presence of definite recognizable organs or combinations of organs, such as conducting organs containing latex (milk), vesicular organs, gloeocystidia, cystidia of various kinds, and noteworthy paraphyses. In the determination of any species, one's effort is soon concentrated upon a small group of four or five species of common structure, some of which may be eliminated by geographic range, spore dimensions, etc. The structural features have been very important in working out the extensive multiplication of species which had arisen in this genus through disregard of the work of earlier mycologists.

As heretofore noted in the case of *Hymenochaete*, the east and west range of the species of *Stereum* is marked in comparison with north and south range; of our 77 species, only 7 range over both north temperate and tropical areas; the other 70 may be arranged in two groups, of which the 29 species comprising the northern group are in the region from Canada to the Gulf states; the other 41 species range from the Gulf states southward. The Gulf states are a region in which northern and southern species overlap in range. The excess of tropical and subtropical species over northern species is due to the small number of northern

stipitate and merismatoid species, of which we have only 5 as against 23 in the warmer southern region. The stipitate and merismatoid species grow sometimes on dead wood and sometimes on the ground; all 49 dimidiate and effuso-reflexed species grow on dead wood, causing its decay, and are distributed 24 in the northern and 18 in the southern area, while 7 others are the species already mentioned as ranging over both north temperate and tropical areas.

### KEY TO THE SPECIES

- §I. Central-stemmed species.—Pileus more or less infundibuliform, sometimes deeply split on one side, usually stipitate; stem typically central or eccentric but lateral-stemmed forms are also present in many of the species. . . . . 1
- §II. Lateral-stemmed species.—Pileus dimidiate, flabelliform, or wedge-shaped—never infundibuliform—attenuated at the base into a more or less distinct stem. . . . . 9
- §III. Merismatoid species.—Pileoli several, somewhat infundibuliform, wedge-shaped, or strap-shaped, borne on or along a common stem. . . . . 12
- §IV. Sessile species, wholly lacking stem or stem-like base.—Pileus dimidiate-sessile, umbonate-sessile, or reflexed, all growing on wood—many typically reflexed species may sometimes occur wholly resupinate. . . . . 13

### §I. CENTRAL-STEMMED SPECIES

- 1. Fructifications solitary or gregarious. . . . . 2
- 1. Fructifications cespitose. . . . . 8
  - 2. Species with pileus always more or less infundibuliform, lacking dimidiate or other lateral-stemmed forms. . . . . 3
  - 2. Species having lateral-stemmed forms occurring more or less frequently in collections. . . . . 5
- 3. Neither cystidia nor gloecystidia present; stem not radicated. . . . . 4
- 3. Gloecystidia present; growing on the ground, 1½–3 cm. high, 3 mm.–2 cm. in diameter; in South Carolina to Brazil. . . . . 3. *S. Ravenelii*
- 3. Gloecystidia present; growing on wood; in West Indies to Dutch Guiana. . . . . 4. *S. surinamense*
- 3. Hair-like cystidia present; pileus white, 2–4 cm. high; in New York to Missouri, and in Alabama, Washington and California. . . . . 10. *S. diaphanum*
- 3. Hair-like cystidia present; pileus slightly darker than *S. diaphanum*, 3–5 mm. high; in New York. . . . . 11. *S. exiguum*
- 3. Hymenial organs unknown; growing on the ground, with stem continued by a long radicated portion which penetrates deeply; in French Guiana. . . . . 5. *S. macrorrhiza*
  - 4. Growing on wood, 2–15 cm. high and in diameter; upper surface with raised, radial ridges; in Gulf states to Bolivia. . . . . 1. *S. caperatum*
  - 4. Growing on wood, 6–11 cm. high and in diameter; upper surface not ridged; pileus and stem velvety; in South America. . . . . 2. *S. hydrophorum*
- 5. Neither cystidia nor gloecystidia present; pileus cartridge-buff to pinard-yellow when fresh; in New Hampshire to North Carolina and Tennessee, and in Japan. . . . . 6. *S. Burtianum*
- 5. Hymenial organs unknown; pileus "straw-colored," 1½ mm. in diameter; stem 4 mm. high; growing on wet ground among moss in Cuba. . . . . 7. *S. rivulorum*
- 5. Cystidia present. . . . . 6
- 5. Gloecystidia present; no cystidia. . . . . 7
  - 6. Pileus white, of soft, bibulous texture, 3–5 mm. broad, 5–7 mm. long; on bark and mosses in Cuba. . . . . 8. *S. quisquiliare*

6. Pileus drying bright yellow, finally fading in the herbarium, of bibulous texture; in West Indies to Paraguay.....9. *S. aurantiacum*
6. Pileus drying tawny olive to Saccardo's umber, not of bibulous texture but coriaceous-hard instead; lateral-stemmed forms are the more common; 5 mm.-2½ cm. high, 2-10 mm. broad; in New York to Cuba, and in Wisconsin.....12. *S. tenerrimum*
7. Somewhat cespitose, obscurely zonate, not bearing a cluster of coarse processes near base of the pileus, 1½-4 cm. high, 8 mm.-3 cm. in diameter; in Ohio and North Carolina to Mexico and West Indies.....13. *S. pergamenum*
7. With a crest of coarse hairs or processes towards base of the pileus; pileus 6-10 mm. across; on dead *Vitis* in South Carolina.....14. *S. cristatum*
8. Hair-like cystidia more or less numerous but no gloeocystidia; pileus cartridge-buff, strigose-squamose; on the ground, Vermont to North Carolina, and in Europe.....15. *S. pallidum*
8. Gloeocystidia barely distinguishable, but no cystidia; pileus plicate on both surfaces, with the upper diamine-brown and the hymenium white; on the ground, Porto Rico to British Guiana...16. *S. elegans*
8. Gloeocystidia present but no cystidia; pileus drying pale cinnamon; on dead wood, Jamaica to Trinidad.....17. *S. decolorans*

## §II. LATERAL-STEMMED SPECIES

9. Fructifications not cespitose..... 10
9. Fructifications cespitose; pileate segments pectinate along their margins; on decaying wood, Carolina to Bolivia.....24. *S. Hartmanni*
9. Fructifications rarely cespitose, usually gregarious; margin of pileus thick and entire; spores 6×5μ, becoming subangular; in Jamaica to Dutch Guiana.....18. *S. radicans*
10. Growing on ground; pileus white when fresh, drying smoke-gray, not zonate; spores 4-5½×3-5μ; in West Indies.....19. *S. pusiolum*
10. Growing on dead wood; pileus of soft bibulous texture, drying pinkish buff, 3-6 mm. wide, 5-7 mm. long; in Cuba and Porto Rico.....23. *S. cyphelloides*
10. Growing on dead wood; pileus not of soft bibulous texture..... 11
11. Pileus drying Verona-brown to chestnut, minutely velvety; stem velvety; spores 4-5×3-4μ; in the West Indies.....20. *S. glabrescens*
11. Pileus whitish when living, livid and pellucid upon drying, 4-6 cm. high, with stem ½-1 cm. long; in Guadeloupe.....21. *S. flabellatum*
11. Pileus white when fresh, drying "reddish brown," 8-15 mm. long, 3-15 mm. broad, often deeply split into segments; in Brazil.....22. *S. fissum*

## §III. MERISMATOID SPECIES

12. Densely cespitose and conerescent throughout into a cluster 7 cm. in diameter, with color and aspect of *Tremellodendron pallidum*; in Mexico and Dutch Guiana.....25. *S. craspedium*
12. Fructification a sessile, rosette-shaped mass of reddish brown pileate flaps; in San Domingo.....26. *S. petalodes*
12. Fructification stipitate, white, with many pileate divisions extending out from a common stem; with aspect of doubled forms of *Thelephora caryophyllea* but white; in Cuba.....27. *S. anastomosans*
12. Fructifications cespitose, somewhat creeping by tips of branches becoming attached to the matrix by disks; pileate branches 1-1½ cm. long, 1-2 mm. broad; in Brazil.....28. *S. proliferum*

## §IV. EFFUSO-REFLEXED SPECIES

13. Hyaline, flexuous gloeocystidia conspicuous in the subhymenium and hymenium..... 15
13. Pyriform, vesicular organs present in trama, subhymenium, or hymenium... 16
13. Colored conducting organs in trama, subhymenium, or hymenium; cystidia absent; hymenium bleeds when wounded, if in vegetative condition. *S. hirsutum* and *S. rameale* sometimes have occasional colored conducting organs in the hymenium..... 17

13. Not having gloeocystidia, vesicular organs, nor colored conducting organs. . . 14
  14. Hymenium lacking cystidia and paraphyses of noteworthy form or color. . . . . 18
  14. Cystidia present, incrustated or without incrustation and hair-like, hyaline, or colored. . . . . 22
  14. Paraphyses noteworthy by bottle-brush form, branching, or color. For species having cystidia in addition to noteworthy paraphyses, see 27. . . . . 28
15. Coriaceous, dense, tawny, zonate, not sulcate, thin, 5-10 mm. in diameter; in Jamaica. . . . . 29. *S. caespitosum*
15. Soft, spongy, snuff-brown to bister, concentrically sulcate, reflexed 1-4 cm.; of wide range. . . . . 30. *S. fuscum*
15. Coriaceous-fleshy, bursting out from the bark, wart-like, peltate, vinaceous-brown, 2-4 mm. in diameter; no cystidia; on poplar. . . . . 31. *S. rufum*
15. Coriaceous-cartilaginous, shield-shaped, wood-brown, 1-4 mm. in diameter; cystidia present; on pine. . . . . 32. *S. Pini*
16. Coriaceous-soft, tomentose, lacking cystidia. . . . . 33. *S. purpureum*
16. Coriaceous-soft, tomentose, often with hairs becoming agglutinate into a rugose surface; hair-like cystidia present. . . . . 34. *S. rugosiusculum*
16. Corky, usually resupinate, sometimes reflexed and with the upper side a horny crust; vesicular bodies very numerous. . . . . 35. *S. Murrayi*
16. Stony hard throughout, the cut surface with a horn-like luster, 1-5 mm. thick; vesicular bodies few; in Mexico and Jamaica. . . . . 36. *S. saritas*
17. Exuding a yellow milk, conducting organs of pale color; narrowly reflexed, tomentose; on *Liquidambar* and *Carpinus* in North Carolina and Alabama. . . . . 37. *S. styracifluum*
17. Milk red, conducting organs dark, numerous; fructifications cespitose-imbricated, villose to hirsute, tobacco-colored; on oak, Canada to Alabama and westward. . . . . 38. *S. gausapatum*
17. Milk red, conducting organs few; fructifications tomentose, concentrically sulcate, not cespitose; Florida to Brazil. . . . . 39. *S. australe*
17. Milk red, conducting organs dark, numerous; fructifications narrowly reflexed; hymenium multizonate; on frondose species, Newfoundland to North Carolina. . . . . 40. *S. rugosum*
17. Milk red, conducting organs numerous; on pine, spruce, and hemlock, Canada to Pennsylvania and westward to the Pacific coast. 41. *S. sanguinolentum*
  18. Fructifications sulphur-colored, fading to cartridge-buff; intermediate layer not bordered by a golden, denser zone; Georgia to Brazil, and in Germany. . . . . 42. *S. sulphuratum*
  18. Fructifications at first some shade of buff by reason of the hairy covering, becoming grayish with age, and at length often zonate and shining where disappearance of the hairy covering reveals the hardened, colored surface of the intermediate layer. . . . . 19
  18. Fructifications white or whitish to cartridge-buff. . . . . 20
  18. Fructifications snuff-brown or black above. . . . . 21
19. Effuso-reflexed, cream-buff at first, strigose-hirsute; hymenium warm buff, sometimes pale smoke-gray; intermediate layer bordered by a narrow golden zone; colored conducting organs rarely present in the hymenium; Newfoundland to South Carolina and westward to the Pacific coast. . . . . 43. *S. hirsutum*
19. Effuso-reflexed at first, becoming umbonate-sessile, tomentose, sometimes with the tomentum becoming torn into narrow concentric bands and showing the bared surface chestnut in the furrows; margin not normally lobate; fructifications 2-7 cm. in diameter; common throughout North America. . . . . 44. *S. fasciatum*
19. Wedge-shaped to umbonate-sessile, with a thinner covering of tomentum than *S. fasciatum*, becoming more bared and zonate than the latter, thinner and flexible, and with the margin normally cut into 2 or 3 large lobes; New York and Wisconsin southward to Brazil. . . . . 45. *S. lobatum*
19. Covering of silky, villous fascicles arranged radially, becoming glabrous, shining, and radially ridged, not lobed nor folded together laterally, nor crisped; Florida to Dutch Guiana. . . . . 46. *S. versicolor*
19. Pilei 2-10 mm. long and broad, crowded together and folded or crisped, strigose-hairy towards the base; marginal portion shining and zoned,

- cinnamon-buff to hazel; colored conducting organs occasionally present  
 .....47. *S. rameale*
20. Fructifications 1-1½ cm. in diameter, plane, thin, papery, silvery to pale gray and with a silky luster; common on *Carpinus*, Canada, eastern United States to Mexico.....48. *S. sericeum*
20. Fructifications 3-10 mm. in diameter, pubescent, white.....49. *S. pubescens*
20. *S. ochroleucum*, an imperfectly known species of Europe, formerly reported in America, belongs here. For description of authentic specimen, see "species imperfectly known."
20. Fructifications 2-4 mm. in diameter, conical, attached by the vertex and pendant, villous; Cuba.....50. *S. conicum*
21. Tobacco-colored, velvety-hirsute, becoming glabrous towards the margin and exposing the blackish, horny crust of the intermediate layer; hymenium pruinose; spores 4-5×2½-3μ; West Indies.....51. *S. vibrans*
21. Villose, blackening; intermediate layer not bordered by a crust; spores 9×4μ; Mexico.....52. *S. crassum*
21. Velutinous and black above; coloring matter of intermediate layer dissolved by KHO solution; hymenium ferruginous, radiately ridged; on coniferous wood, in northern United States.....53. *S. radiatum* 23
22. Cystidia hyaline, non-incrusted, hair-like.....23
22. Cystidia dark, or becoming dark, cylindric, obtuse, distinguishable from colored conducting organs by more or less granule-incrustation; on conifers only.....24
22. Cystidia rough-walled or incrusted, somewhat colored either wholly or under the incrustation, pointed, not resembling conducting organs.....25
22. Cystidia incrusted, not at all colored except in *S. cinerascens* at times; paraphyses not noteworthy.....26
22. Cystidia incrusted, not colored; paraphyses noteworthy by color or form.....27
23. Cinnamon to bone-brown, hoary; hair-like cystidia very few; spores 9-10×3-4μ; Washington to New Mexico.....54. *S. patelliforme*
23. White, villose-tomentose; hymenium bright yellow; hair-like cystidia obtuse, 20-25×4-6μ, numerous.....55. *S. ochraceo-flavum*
24. Coriaceous-spongy, dry, usually resupinate; hymenium pruinose, multizonate; cystidia colored, cylindric, 90-150×6-8μ; spores 9-13×4-5μ; northern United States.....56. *S. abietinum*
24. Very thick, felty, concentrically sulcate, drying with odor of anise; cystidia and basidiospores like those of *S. abietinum*; colored imbedded spores often present; Rocky Mountain states.....57. *S. rugisporum*
24. Narrowly reflexed, tomentose, Prout's brown; hymenium amber; cystidia and spores as in *S. abietinum*; Vermont and New York.....58. *S. ambiguum*
25. Vinaceous-lilac when young, becoming snuff-brown; cystidia colored, even, rough-walled or incrusted, 100-200×6-10μ; from North Carolina and Ohio southward.....59. *S. umbrinum*
25. Coriaceous-papery, thin, pliant, tomentose, concentrically sulcate, snuff-brown; hymenium velvety, snuff-brown, not multizonate; cystidia colored under the incrustation, conical, 30-75×12-25μ; Florida to Brazil.....60. *S. papyrinum*
25. With aspect of *S. papyrinum* but thinner; cystidia 45-60×5-12μ; hymenial layer 200μ thick; Jamaica.....61. *S. Earlei*
25. Coriaceous, tomentose, concentrically sulcate, hair-brown; cystidia slightly colored, roughened above, 50-120×4½μ; on conifers, northern United States and Canada, and in Rocky Mountains.....62. *S. Chailletii*
25. Corky, usually resupinate, 1100μ thick; hymenium drab, 600μ thick, containing innumerable, colored, rough cystidia 20-25×5-7μ; West Indies.....63. *S. ferreum*
26. Strigose-hairy, concentrically sulcate, buff, weathering gray; hymenium pinkish buff to drab, bristling with cystidia 100-150×12-20μ, sometimes brownish at the base; spores 10-12×6μ.....64. *S. cinerascens*
26. Coriaceous-gelatinous, small, whitish; cystidia 45-90×12-15μ; spores 15-20×12-14μ; Jamaica.....65. *S. magnisporum*

26. Spongy-soft, tomentose; cystidia  $36-60 \times 9-12 \mu$ ; spores  $5-9 \times 3-4 \mu$ ; New York to Mexico. . . . . 66. *S. spumeum*
26. Bursting out from the bark, forming a gray hymenium and becoming reflexed,  $1-2\frac{1}{2}$  mm. in diameter. . . . . 67. *S. erumpens*
26. Corky, rigid, concentrically sulcate, bister; hymenium ruddy, becoming zonate; cystidia  $30-50 \times 8-12 \mu$ ; spores  $4-6 \times 3-5 \mu$ ; on hemlock and other conifers, Canada to Texas and westward to the Pacific coast. . . . . 68. *S. sulcatum*
26. Tobacco-colored and sulcate above, with a horn-like crust under the tomentum; hymenium whitish; cystidia  $30-36 \times 7 \mu$ ; on oak, North Carolina and Ohio to Mexico. . . . . 69. *S. subpileatum*
27. With aspect of *S. subpileatum* as given above, but hymenium contains numerous and conspicuous bottle-brush paraphyses in addition to cystidia; Pennsylvania to Colombia. . . . . 70. *S. sepium*
27. With brown, velvety hymenium and a white margin; paraphyses filiform, colored; spores hyaline,  $6-11 \times 3-4\frac{1}{2} \mu$ . . . . . 71. *S. albobadium*
27. With aspect of dark specimens of *S. albobadium*, but with thicker, zonate hymenium and imbedded spores colored; Oregon to Mexico. . . . . 72. *S. heterosporum*
27. Becoming narrowly reflexed, fuscous, 2-10 mm. in diameter; hymenium velvety, bister; paraphyses colored, with bushy-branched tips; Canada to Alabama and Arkansas. . . . . 73. *S. versiforme*
28. Snuff-brown and sulcate above, tomentose; hymenium pruinose, zoned, containing bottle-brush paraphyses; on oak, Florida and Venezuela. . . . . 74. *S. insigne*
28. Fuscous, sulcate, not tomentose but with upper surface a horn-like crust, 2-3 mm. thick; Mexico. . . . . 75. *S. durum*
28. Woody, resupinate, crowded as if confluent and then broken into frustules, 2-4 mm. in diameter, above black and crust-like; hymenium pinkish buff to whitish and pruinose; on oak. . . . . 76. *S. frustulosum*
28. Usually resupinate, coriaceous-soft; hymenium light vinaceous-purple when young, becoming avellaneous, containing filiform paraphyses with short lateral prongs; aspect of *Corticium evolvens*; Canada to North Carolina. . . . . 77. *S. roseo-carneum*

1. *Stereum caperatum* (Berk. & Mont.) Masee, Linn. Soc. Bot. Jour. 27: 161. 1890; Lloyd, Myc. Writ. 4. Stip. Stereums, 17. text f. 531. 1913. Plate 2, fig. 1.

*Thelephora caperata* Berkeley & Montagne, Ann. Sci. Nat. Bot. III. 11: 241. 1849; Montagne, Syll. Crypt. 175. 1856; Sacc. Syll. Fung. 6: 523. 1888.

Illustrations: Lloyd, loc. cit.; Engl. & Prantl, Nat. Pflanzenfam. (1: 1\*\*): 124. f. H-J.

Type: in Kew Herb.

Pileus coracelous, infundibuliform, drying pinkish buff, the upper side with elevated radial ridges and usually densely tomentose with coarse fibers; in structure 600-700  $\mu$  thick, composed of densely, longitudinally arranged, thick-walled, hyaline hyphae 3  $\mu$  in diameter; stem central or sometimes absent, with attachment by a tomentose disk; hymenium pale pinkish buff, somewhat radially rugose, glabrous; hair-like cystidia not incrustated, 3-4 $\frac{1}{2}$   $\mu$  in diameter. flexuous, often constricted near the outer end,

protruding up to  $12\ \mu$ , are sometimes present; spores hyaline, even,  $8-10 \times 3-4\frac{1}{2}\ \mu$ .

Fructifications 2-10 cm. high, 2-15 cm. in diameter; stem, when present, 5 mm. - 2 cm. long, 2-5 mm. thick, often sessile.

On decaying wood of frondose species. Florida, Louisiana, and West Indies to Bolivia. June to April, probably throughout the year. Common.

*S. caperatum* is the largest infundibuliform *Stereum* of the Gulf states and the West Indies. Its large size, upper surface with elevated, radial ridges and usually heavy tomentum of coarse fibers, occurrence on wood to which it is attached by a villose or tomentose disk, constitute a group of characters by which the *S. caperatum* is readily recognized. Lloyd has published in his account of this species that it has true metuloids (incrusted cystidia) projecting  $20-30\ \mu$ , but I have found none whatever in either the type or in other collections referable to this species.

*Thelephora lamellata* Berk. & Curtis, a species of *Stereum* related to *S. caperatum* and of rather similar aspect, occurring on islands of the Pacific, shows in the type specimen from Fiji Islands conical incrusted cystidia  $6-12\ \mu$  in diameter, protruding  $12-25\ \mu$ , and subglobose spores  $3-3\frac{1}{2} \times 3\ \mu$ . Since Lloyd cited *S. caperatum* as occurring in Samoa, the Philippines, and Australia, it is possible that his observations on incrusted cystidia of *S. caperatum* were based on specimens from the Pacific region really referable to *Stereum lamellatum* rather than on the true *S. caperatum* from the American continent. In Hedwigia 53:75, 1913, Bresadola gives *T. lamellata* as a synonym of *Cladoderris infundibuliformis* (Kl.) Fries. I have seen no American specimens referable to *S. lamellatum*.

Specimens examined:

Florida: New Smyrna, A. S. Bertolet; Ocala, W. H. Long, 12373 (in Mo. Bot. Gard. Herb., 55125).

Louisiana: A. B. Langlois, comm. by C. G. Lloyd, 2740; St. Martinville, A. B. Langlois, 2896 and an unnumbered specimen, C. J. Humphrey, 2518 (in Mo. Bot. Gard. Herb., 5111).

Cuba: C. Wright, 290, 509 (in Kew Herb.); Candelaria, Earle & Wilson, 201; Guantanamo (in Weir Herb., 10858);

Havana Province, *P. Wilson*, 1172, comm. by F. S. Earle; Herradura, *Earle & Merrill*, 180, comm. by N. Y. Bot. Gard. Herb.

Porto Rico: Manati, *Johnston & Stevenson*, 2006 (in Mo. Bot. Gard. Herb., 3396).

San Domingo: 259 (in Kew Herb.).

Jamaica: Cinchona, *L. M. Underwood*, 3172 (in N. Y. Bot. Gard. Herb. and in Mo. Bot. Gard. Herb., 56271); Cockpit Country, *E. G. Britton & D. W. Marble*, 338 (in N. Y. Bot. Gard. Herb.).

St. Kitts: Lambert Estate, *N. L. Britton & J. F. Cowell*, 672 (in N. Y. Bot. Gard. Herb.).

Brazil: Bahia, *Blanchet*, 19 (in Kew Herb.).

Bolivia: Yungas, *A. Miguel Bang*, 295 (in Mo. Bot. Gard. Herb.).

**2. *S. hydrophorum*** Berkeley, Ann. & Mag. Nat. Hist. I. 14: 327. *pl. 9. f. 2.* 1844; Hooker's Jour. Bot. 8: 273. *pl. 6.* 1856; Sacc. Syll. Fung. 6: 555. 1888; Masee, Linn. Soc. Bot. Jour. 27: 159. 1890; Lloyd, Myc. Writ. 4. Stip. Stereums, 29. *text f. 547, 548.* 1913. Plate 2, fig. 2.

*Hymenochaete crateriformis* P. Hennings, Hedwigia 43: 172. 1904; Sacc. Syll. Fung. 17: 166. 1905.

Illustrations: Ann. & Mag. Nat. Hist. I. 14: *pl. 9. f. 2;* Hooker's Jour. Bot. 8: *pl. 6;* Lloyd, *loc. cit.*

Type: in Kew Herb.

Pileus stipitate, coriaceous, infundibuliform, drying Prout's brown, obscurely zonate, velvety, sometimes bearing large, branched hairs at the center and bottom of the cups, the margin entire; stem central, cylindric, solid, velvety, colored like the pileus, enlarged at the base and attached by disk; hymenium even, drying snuff-brown, not setulose; in structure 600  $\mu$  thick, composed of intermixed and interwoven hyaline and slightly colored hyphae, the latter of which give their color to the pileus and hymenium and curve into the hymenium as cylindric, obtuse, slightly colored paraphyses 3  $\mu$  in diameter, not emergent above its surface; no cystidia, gloecystidia, nor setae; spores hyaline, globose, even, 3  $\mu$  in diameter.

Pileus 4–10 cm. in diameter, 3–6 cm. deep; stem 3–5 cm. long, 4–5 mm. thick.

On wood on the ground. Venezuela, British Guiana, and Brazil. November.

This South American species ranges so far to the north that it may possibly occur also in the West Indies or Central America. The fructifications have dimensions and general aspect of those of *S. caperatum* but are distinguishable by darker color of pileus, stem and hymenium, by velvety covering of pileus and stem, and by absence of elevated longitudinal ridges on the surface of the pileus.

Specimens examined:

Exsiccati: Ule, Myc. Brasil., 40, type distribution of *Hymenochaete crateriformis*.

Venezuela: Maripa, M. A. Carriker, comm. by W. G. Farlow, III; Rio Mato, M. A. Carriker, comm. by W. G. Farlow, IV.

Brazil: Spruce (in Curtis Herb.); Amazonas, Marmellos, E. Ule, in Ule, Myc. Brasil., 40.

3. **S. Ravenelii** Berk. & Curtis, Grevillea 1: 162. 1873; Sacc. Syll. Fung. 6: 552. 1888; Masee, Linn. Soc. Bot. Jour. 27: 164. pl. 7. f. 2. 1890; Lloyd, Myc. Writ. 4. Stip. Stereums, 25. text f. 543. 1913. Plate 2, fig. 3.

Illustrations: Lloyd, *loc. cit.*; Masee, *loc. cit.*

Type: type distribution in Ravenel, Fungi Car. 4: 13.

Fructifications gregarious, coriaceous, thin, often growing from a common mycelium; pileus infundibuliform, sometimes split on one side, even, drying cinnamon-buff to bay, often shining and zonate; stem slender, equal, minutely tomentose, drying pale olive-buff to pinkish buff; hymenium even, glabrous, colored like the stem; pileus in section 300–500  $\mu$  thick, composed of densely and longitudinally arranged hyaline hyphae 3  $\mu$  in diameter; flexuous gloeocystidia 30–60  $\times$  4½–7  $\mu$  curve into the hymenium but do not protrude above its surface; no cystidia; spores hyaline, even, 3–4  $\times$  2½–3  $\mu$ .



Fig. 1.  
*S. Ravenelii*.  
Gloeocystidia  $\times$   
665.  
From authentic  
specimen.

Fructifications 1½–5 cm. high, 3 mm.–3 cm. in diameter; stem 5–10 mm. long, ½–1½ mm. thick.

On the ground, rarely on wood humus. South Carolina to Mexico, West Indies, and Brazil. July to April.

*S. Ravenelii* is near *S. pergamenum* in microscopic characters but is constantly infundibuliform, with slender, more conspicuous stem, and occurs on the ground except very rarely, and is gregarious rather than cespitose. The range of *S. Ravenelii* southward to Brazil is so much greater than has been noted heretofore that it would be well to compare with it authentic specimens of some of the imperfectly described South American species of central-stemmed *Stereums*

Specimens examined:

Exsiccati: Ravenel, Fungi Car. 4: 13.

South Carolina: *H. W. Ravenel*, in Ravenel, Fungi Car. 4: 13, type distribution.

Alabama: *Beaumont*, 207 in part (the small specimens on right of the card in Curtis Herb., 4629); *Montgomery*, *R. P. Burke*, 26, 181 (in Mo. Bot. Gard. Herb., 10305, 57059).

Louisiana: *Baton Rouge*, *C. W. Edgerton*, 1544, and *C. J. Humphrey & C. W. Edgerton*, comm. by *C. J. Humphrey*, 2523, 2522 (in Mo. Bot. Gard. Herb., 42921 and 42939 respectively); *St. Martinville*, *A. B. Langlois*, 1847.

Mexico: *San Luis Potosi*, *C. G. Pringle* (in Farlow Herb.).

Cuba: *C. Wright*, 255 (under the name *Stereum elegans* in Curtis Herb.); *Candelaria*, *Earle & Wilson*, 205, 207; *Herradura*, *N. L. Britton*, *E. G. Britton*, *F. S. Earle & C. S. Gager*, 6397 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56303).

Trinidad: *Carrengo*, *Carriker* (in Farlow Herb., 1).

Brazil: *Blumenau*, *A. Möller*, the *Stereum elegans* of *Hedwigia* 35: 288. 1896, comm. by *G. Bresadola*.

4. *S. surinamense* Lévillé, Ann. Sci. Nat. Bot. III. 2: 209. 1844; Sacc. Syll. Fung. 6: 556. 1888; Masee, Linn. Soc. Bot. Jour. 27: 161. 1890; Lloyd, Myc. Writ. 4. Stip. Stereums, 26. text f. 544. 1913. Plate 2, fig. 4.

*Stereum fulvo-nitens* Berkeley, Ann. & Mag. Nat. Hist. II. 9: 198. 1852; Sacc. Syll. Fung. 6: 556. 1888; Masee, Linn. Soc. Bot. Jour. 27: 162. 1890.

Illustrations: Lloyd, loc. cit.

Type: in Museum of Paris Herb. presumably.

Pileus coriaceous, infundibuliform, sometimes more elongated on one side, glabrous, shining, lineate or striate, drying tawny to hazel, faintly zonate with numerous very narrow zones; stem central or eccentric, cylindric, drying avellaneous to burnt umber, fibrillose to minutely tomentose, attached at the base by a mycelial pad; hymenium glabrous, even, avellaneous to cinnamon; pileus in section 400  $\mu$  thick, composed of a broad layer of densely and longitudinally arranged, thick-walled, hyaline hyphae 3  $\mu$  in diameter and of a hymenial layer 45–90  $\mu$  thick, the subhymenial portion of which may become thicker than the palisade layer of basidia and gloecystidia and appears granular and composed of very fine hyphae; gloecystidia 15–30  $\mu$  long, with ventricose base 6–9  $\mu$  in diameter, sometimes barely emergent above the basidia; spores hyaline, even,  $3-4 \times 2-3 \mu$ .

Fructifications  $1\frac{1}{2}$ –4 cm. high,  $1-2\frac{1}{2}$  cm. in diameter; stem 3–7 mm. long, about  $1\frac{1}{2}$  mm. in diameter.

On dead wood. West Indies, Honduras, and Dutch Guiana. November.

Lloyd's account and figures have made possible the reference to *S. surinamense* of the collections cited below, for the original description by L  veill   is fragmentary and does not even note whether the specimens were growing on the ground or on wood. I have not seen the types of either *S. surinamense* or *S. fulvo-nitens*. The specimens cited below are characterized by the attachment to the wood by a conspicuous mycelial pad, by rich hazel and shining upper surface of the large, narrowly zonate pileus, by the gloecystidia, and by the minutely granular subhymenial region in which the hyphae are much finer than in the main hyphal layer and run at right angles to the latter.

Specimens examined:

San Domingo: Consuelo, *N. Taylor*, 176 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56293).

Trinidad: *R. Thaxter*, comm. by W. G. Farlow (in Mo. Bot. Gard. Herb., 44304).

British Honduras: *M. E. Peck* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56326).

5. *S. macrorrhizum* (L  veill  ) Lloyd, Myc. Writ. 4. Stip. Stereums, 28. 1913.

*Thelephora macrorrhiza* Lévillé, Ann. Sci. Nat. Bot. III. 5: 146. 1846; Sacc. Syll. Fung. 6: 524. 1888.

Type: in Museum of Paris Herb., according to Lévillé and Lloyd.

Pileus infundibuliform, coriaceous, somewhat membranaceous, rufescent, striatulate, the margin erect, possibly laciniate; hymenium sulcate, rather pallid; stem rather long, radicated.

On ground, French Guiana. Coll. *Melinon*.

Pileus coriaceous, nearly membranaceous, infundibuliform, russet, with rugosity from base to margin, the latter thin, lacinate; hymenium glabrous, rugose like upper surface of pileus; stem 1-2 decimeters long, glabrous, continued by a long radicated portion which extends perpendicularly into the ground. This character and also the absence of hairy covering of the stem afford a great difference between this species and *Stereum surinamense*.

The above is a translation of the original description. I have not seen authentic specimens; Lloyd notes, *loc. cit.*, that they are, "*Stereum elegans*, of an unusually regular growth. Not so confluent as ordinary."

**6. *S. Burtianum*** Peck, N. Y. State Mus. Bul. 75: 21. *pl. O. f.* 30-34. 1904; Sacc. Syll. Fung. 17: 163. 1905; Lloyd, Myc. Writ. 4. Stip. Stereums, 21. *text f.* 537. 1913. Plate 2, fig. 5. Illustrations: Peck, *loc. cit.*; Lloyd, *loc. cit.*

Type: in N. Y. State Mus. Herb. and in Burt Herb.

Fructifications gregarious, coriaceous, thin, infundibuliform, sometimes split to the stem on one side, sometimes dimidiate, the upper surface slightly uneven with radiating fibrils and fibrillose ridges, cartridge-buff when fresh, drying Sayal-brown to hazel, the margin lobed or incised; stem solid, minutely tomentose, Sayal-brown in the herbarium; hymenium even or radiately uneven, glabrous, yellow ocher to pinard-yellow when fresh, becoming pinkish buff to Sayal-brown in the herbarium; pileus in section 600  $\mu$  thick, composed of densely and longitudinally arranged hyphae 2  $\mu$  in diameter; no cystidia nor gloecystidia; spores hyaline, even, subglobose, 3-4  $\mu$  in diameter, or 4  $\times$  3  $\mu$ .

Fructifications usually 12-20 mm. high, 5-15 mm. in diameter; stem 3-8 mm. long,  $\frac{2}{3}$ -1  $\frac{1}{2}$  mm. thick.

On the ground in frondose woods. New Hampshire to North Carolina and Tennessee, and in Japan. July to October.

Distinguishing characters of this species are the radially arranged fibrils and fibrillose ridges of the upper surface of the pileus, bright yellow hymenium of fresh specimens, small subglobose spores, and absence of zonation, cystidia, and gloeocystidia. These characters separate the species from *S. aurantiacum* and *S. Ravenelii* and from specimens of *S. diaphanum* which have become discolored in the herbarium. The sections crush out and tissues spread apart when slight pressure is applied to the cover glass—a character unusual in stipitate Stereums. The specimen from Tennessee consists of two dimidiate pilei  $2 \times 2\frac{1}{2}$  cm. At Amherst, Massachusetts, Professor Anderson saw perhaps a thousand fructifications of this growing in an area of a square rod; to him I am indebted for the color observations on fresh specimens and for specimens in growing condition showing the colors and also the fact that the consistency of the pileus is not fleshy enough for inclusion of this species in *Craterellus*.

Specimens examined:

New Hampshire: Chocorua, *W. G. Farlow*, three collections (two of which are in Mo. Bot. Gard. Herb., 55242 and 55571, and the third in Farlow Herb.).

Vermont: Lake Dunmore, *W. G. Farlow* (in Farlow Herb.).

Massachusetts: Amherst, *P. J. Anderson* (in Mo. Bot. Gard. Herb., 56364, 56365).

New York: Shokan, Ulster Co., *C. H. Peck*, type.

North Carolina: Asheville, *H. C. Beardslee*, 2.

Tennessee: Elkmont, *C. H. Kauffman*, 80 (in Mo. Bot. Gard. Herb., 44994).

Japan: Sendai, *A. Yasuda*, 21 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56290).

**7. *S. rivulorum* Berk. & Curtis**, Linn. Soc. Bot. Jour. 10: 330. 1868; Sacc. Syll. Fung. 6: 552. 1888; Masee, Linn. Soc. Bot. Jour. 27: 167. 1890; Lloyd, Myc. Writ. 4. Stip. Stereums, 21. 1913.

Type: in Kew Herb. and probably in Curtis Herb.

I failed to take any notes of the type specimens of this species

when there was opportunity and have seen no collections which seem referable here. The translation of the original description follows:

Minute, straw-colored; pileus cyathiform, decurrent into a stem dilated above, the margin undulate; hymenium glabrous.

On wet ground amongst moss. Cuba, *C. Wright*, 533.

Pileus  $1\frac{1}{2}$  mm. across; stem 4 mm. high, oblique but not really lateral. Habit of a small stipitate *Peziza*. Spores globose,  $2-2\frac{1}{2}$   $\mu$  according to Masee.

**8. *S. quisquiliare*** (Berk. & Curtis) Lloyd, *Myc. Writ.* 4. *Stip. Stereums*, 36. *text f.* 567. 1913. Plate 2, fig. 6.

*Thelephora quisquiliaris* Berk. & Curtis, *Linn. Soc. Bot. Jour.* 10: 329. 1868; Sacc. *Syll. Fung.* 6: 524. 1888.

Illustrations: Lloyd, *loc. cit.*

Type: in Kew Herb. and Curtis Herb.

Pileus very small, flabellate or rarely cyathiform, tomentose, shining white; stem lateral, short, thickened above; pileus in section composed of loosely arranged hyphae 3–4  $\mu$  in diameter; cystidia hair-like, not incrusting, 6  $\mu$  in diameter, protruding up to 40  $\mu$  beyond the basidia; spores hyaline, even,  $4 \times 3-4$   $\mu$ .

Pileus 3–5 mm. broad, and 5–7 mm. long including the stem-like base.

On particles of bark among moss and on mosses. Cuba.

The fructifications of *S. quisquiliare* are small and of soft bibulous texture and resemble in aspect those of *S. cyphelloides* and *Cyphella muscigena*, but are distinguished from both these species by the hair-like cystidia, of which I noted the presence upon examination of the type but which no longer show well in the permanent microscopical preparation. I had hoped that recent collections would confirm the note as to hair-like cystidia and enable me to be more confident that *Thelephora quisquiliaris* should not be transferred to *Cyphella*.

Specimens examined:

Cuba: *C. Wright*, 519, type (in Curtis Herb.).

**9. *S. aurantiacum*** (Pers.) Lloyd, *Myc. Writ.* 4. *Stip. Stereums*, 22. *text f.* 538. 1913. Plate 6, fig. 7.

*Thelephora aurantiaca* Persoon in Gaudichaud, *Voy. Urania Bot.* 176. 1827; Fries, *Epicr.* 536. 1838; *R. Soc. Sci. Up-*

sal. Actis III. 1: 108. 1851; Montagne in d'Orbigny, Voy. Am. Merid. Bot. 2: 48. 1839; in Ramon de la Sagra, Fl. Cub. 4: 228. pl. 14. f. 1. 1853; Berkeley & Curtis, Linn. Soc. Bot. Jour. 10: 328. 1868; Sacc. Syll. Fung. 6: 526. 1888.—*T. sericella* Berkeley & Curtis, Linn. Soc. Bot. Jour. 10: 328. 1868; Sacc. Syll. Fung. 6: 522. 1888.—*T. affinis* Berkeley & Curtis, Linn. Soc. Bot. Jour. 10: 329. 1868 (not *T. affinis* Pers.); Sacc. Syll. Fung. 6: 530. 1888.—*Podoscypha aurantiaca* (Pers.) Patouillard in Duss, Fl. Crypt. Antilles Fr. 230. 1904.—An *T. spectabilis* Lévillé, Ann. Sci. Nat. Bot. III. 2: 206. 1844?—An *Stereum xanthellum* Cooke, Grevillea 9: 12. 1880?

Illustrations: Lloyd, *loc. cit.*; Montagne, *loc. cit.*

Fructifications coriaceous, soft, everywhere drying Naples-yellow, losing the bright color in the herbarium; upper surface sericeous, lineate-striate, the margin variable, often somewhat fimbriate; stem thin, with yellowish tomentum at the base and sometimes with tomentose mycelial strands; hymenium even, or nearly so, setulose with hyaline hairs under a lens; cystidia hair-like, not incrusting, cylindric, obtuse, 6–8  $\mu$  in diameter, protruding up to 40  $\mu$ ; spores hyaline, even, 5–8  $\times$  3–4  $\mu$ .



Fig. 2.  
*S. aurantiacum*.  
Cystidium, basidium, and spores,  
 $\times 665$ .

Fructifications 2–3 cm. high; pileus 1–2 cm. in diameter when infundibuliform and 5 mm.–4 cm. when flabelliform; stem 1 cm. long, about 1 mm. thick.

On ground and dead wood. West Indies to Paraguay. June to February. Apparently frequent.

*S. aurantiacum* is unique among the stipitate Stereums by its bright yellow color. Lloyd states that old specimens may lose their bright yellow color and become brown, and the figures by Montagne indicate this also. I have seen only one gathering in which some of the specimens have discolored brownish; this gathering from Porto Rico, by Prof. Stevenson, bears the field note: "nearly pure white when collected; became yellow in drying; no yellow showed until partly dried." The extensive synonymy of this species is due to its occurrence sometimes on the ground, sometimes on wood, sometimes being wholly infundi-

buliform and sometimes wholly flabelliform, but occasionally a gathering shows both infundibuliform and flabelliform specimens. The soft texture of the pilei—like filter-paper or like wash leather—the large, cylindric, non-incrusted cystidia, and large elongated spores are a good combination of characters for the recognition of *S. aurantiacum* independently of the yellow color. Lloyd gives *Thelephora spectabilis* and *Stereum xanthelium* as synonyms of *S. aurantiacum*, and this seems quite probable according to the original descriptions of these species, but he does not state that he has studied the authentic specimens; I have not been able to examine them.

Unless there is more than one edition of Gaudichaud's 'Voy. Urania Bot.,' there is an error, as noted by Lloyd, in the citation by Fries in 'Epicrisis,' followed by later authors, of a figure of *T. aurantiaca* by Persoon. Dr. Farlow kindly searched for me for such a figure in his copy but without success.

Specimens examined:

Jamaica: Port Antonio, *F. S. Earle*, 600, comm. by N. Y. Bot.

Gard. Herb.; *A. E. Wight*, comm. by W. G. Farlow; Troy and Tyre, *W. A. Murrill & W. Harris*, 1112, comm. by N. Y. Bot. Gard. Herb.

Cuba: *C. Wright*, 237, type of *Thelephora sericella* (in Curtis Herb.); *C. Wright*, 198, 263, type of *Thelephora affinis* B. & C. (in Curtis Herb.); Banao Mts., *Leon & Clement*, 5570 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56262); Ceballos, *C. J. Humphrey*, 2683 (in Mo. Bot. Gard. Herb., 8267); Guantanamo, *Hioram* (in J. R. Weir Herb., 10583, and Mo. Bot. Gard. Herb., 56217); Omaja, *C. J. Humphrey*, 3025 (in Mo. Bot. Gard. Herb., 8632); Nipe Bay, *F. S. Earle*, No. A.

Porto Rico: Rio Piedras, *J. R. Johnston*, comm. by J. A. Stevenson, 1987 (in Mo. Bot. Gard. Herb., 10660); *J. A. Stevenson*, 3354, 5585 (in Mo. Bot. Gard. Herb., 17720 and 6908).

San Domingo: Consuelo, *N. Taylor*, 178 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56304).

10. *S. diaphanum* (Schw.) Cooke in Sacc. Syll. Fung. 6: 558. 1888; Masee, Linn. Soc. Bot. Jour. 27: 162. 1890; Lloyd, Myc. Writ. 4. Stip. Stereums, 19. text f. 534. 1913.

Plate 2, figs. 8 and 9.

*Thelephora diaphana* Schweinitz in Berk. & Curtis, Acad. Nat. Sci. Phila. Jour. 2: 278. 1853.—*T. Willeyi* Clinton in Peck, N. Y. State Mus. Rept. 26: 71. 1874; Sacc. Syll. Fung. 6: 524. 1888.—An *T. Sullivantii* Montagne, Syll. Crypt. 176. 1856?

Type : in Herb. Schweinitz, in Curtis Herb., and in Kew Herb.

Fructifications coriaceous, thin, deeply infundibuliform, sometimes deeply split, white, drying diaphanous, sericeous, fibrillose, striate, sometimes with slightly elevated ridges, sometimes obscurely zoned, the margin thin, entire or laciniately toothed; stem slender, cylindric, more or less clothed with white matted down which is usually present at the base and binds the earth together in a ball; pileus of type in section 200  $\mu$  thick, composed of longitudinally arranged, thin-walled hyaline hyphae 3  $\mu$  in diameter, densely crowded together; hymenium white, setulose with hyaline hairs under a lens; cystidia hair-like, not incrustated, cylindric, obtuse, 6–9  $\mu$  in diameter, protruding 20–60  $\mu$ ; spores hyaline, even, 4–5  $\times$  2½–3  $\mu$ .



Fig. 3.  
*S. diaphanum*.  
Cystidium,  
basidia, and  
spores,  $\times$  665.

Fructifications 2–4 cm. high, 8 mm.–2 cm. in diameter; stem 1–3 mm. in diameter.

On the ground in moist woods of frondose species. New York to Missouri, and in Alabama, Washington, and California.

*S. diaphanum*, as collected by Schweinitz and shown in pl. 2, fig. 8, differs from *S. aurantiacum* in absence of bright yellow color, in shorter spores, and in stem and ground at base of stem being merely white-downy. In western New York, this species attains a more luxuriant growth than the small specimens collected by Schweinitz, has a larger and rather thicker pileus and thicker stem as shown in pl. 2, fig. 9; such larger specimens were published as *Thelephora Willeyi*, but the intergradations with *S. diaphanum* are so numerous and close that it should be kept with the latter in my opinion.

Specimens examined:

New York: Buffalo, Clinton, type of *Thelephora Willeyi* (in N. Y. State Mus. Herb.); Chappaqua, Mrs. C. E. Ryder & Mrs. W. A. Murrill (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56289); Freeville, V. B. Walker, 15

(in Mo. Bot. Gard. Herb., 8407); Geddes, *G. E. Morris*, *G.*; Ithaca, *C. Thom* (in Cornell Univ. Herb., 9992); Jamesville, *H. D. House* (in N. Y. State Mus. Herb. and in Mo. Bot. Gard. Herb., 55498), and *L. M. Underwood*; Lowville, *C. H. Peck* (in N. Y. State Mus. Herb.); Orville, *G. E. Morris*, *G.*

Ohio: Gnaddenhutte, *Schweinitz*, type (in Herb. Schweinitz and in Curtis Herb.).

Missouri: Valley Park, *E. A. Burt* & *L. O. Overholts* (in Mo. Bot. Gard. Herb., 44059).

Alabama: Montgomery, *R. P. Burke*, 25 (in Mo. Bot. Gard. Herb., 13146.).

Washington: Seattle, *W. A. Murrill*, 128, 143, 144 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 55745, 55729, 55726).

California: Tamalpais, *H. W. Harkness* (under the herbarium name *Thelephora Harknessii* Peck in N. Y. State Mus. Herb. and Mo. Bot. Gard. Herb., 55925).

*Cotylidia undulata*

11. *S. exiguum* (Peck) Burt, n. comb. Plate 2, fig. 10.

*Thelephora exigua* Peck, N. Y. State Mus. Bul. 54: 953. 1902; Sacc. Syll. Fung. 17: 161. 1905.

Type: in N. Y. State Mus. Herb. and in Burt Herb.

Pileus coriaceous-membranaceous, very thin, diaphanous, infundibuliform, radiately fibrous-striate, becoming bister in the herbarium, originally "pale alutaceous" according to Peck, the margin lacerate; stem slender, solid, pruinose, and bearing a few whitish hairs which are present also on the ground about the base; pileus in section 100  $\mu$  thick, composed of longitudinally arranged, hyaline hyphae  $2\frac{1}{2}$ –3  $\mu$  in diameter, closely crowded together; cystidia hair-like, not incrustated, cylindric, obtuse, 7  $\mu$  in diameter, protruding 25  $\mu$  beyond the basidia; spores hyaline, even,  $4\frac{1}{2} \times 2$   $\mu$ , borne 4 to a basidium.

Fructifications 1–3 mm. in diameter, 3–5 mm. high; stem 2 mm. long,  $\frac{1}{4}$ – $\frac{1}{3}$  mm. in diameter; pileus  $\frac{1}{10}$  mm. thick.

On the ground, Westport, New York. October.

*S. exiguum* is miniature *S. diaphanum* of slightly darker color. It is known from the original collection only. The smallest specimens of *S. diaphanum* are many times larger than

the largest specimen of *S. exiguum*. While differences in size are not generally a good criterion for specific distinction, I am inclined to think that they will prove so in this instance.

Specimens examined:

New York: Westport, *C. H. Peck*, type (in N. Y. State Mus. Herb. and in Burt Herb.).

12. *S. tenerrimum* Berk. & Ravenel, *Grevillea* 1: 162. 1873; Sacc. Syll. Fung. 6: 551. 1888; Masee, Linn. Soc. Bot. Jour. 27: 165. 1890. Plate 2, fig. 11.

Type: in Kew Herb. and Curtis Herb.

Pileus coriaceous, thin, infundibuliform or flabelliform, soon lobed and split, upper surface slightly rough, fibrillose-striate, not zonate or only very indistinctly "pale tan" when collected, becoming tawny olive to Saccardo's umber in the herbarium; stem filiform, whitish, bearing some fibrils towards the base; hymenium even, concolorous, setulose with hyaline hairs under a lens; pileus in section 300  $\mu$  thick, composed of longitudinally and densely arranged hyaline hyphae 3  $\mu$  in diameter; cystidia hair-like, not incrustated, 4–8  $\mu$  in diameter, protruding 30–50  $\mu$ ; spores hyaline, even, subglobose, 4–5  $\times$  3–4  $\mu$ .

Fructifications 2–10 mm. broad, 5mm.–2½ cm. high; stem 3–7 mm. long, ¼–½ mm. thick.

On ground among mosses. New York, Wisconsin, South Carolina, and Cuba. July to November. Rare.

The collections which I have referred to *S. tenerrimum* are from the widely separated localities stated above and only a single gathering of several fructifications at each locality. There are slight differences between the specimens of the several gatherings, but not great enough to preclude their reference to a single species, although doing so has required some generalization from the original description.

*S. tenerrimum* is related to *S. undulatum* of northern Europe as known to me by the specimens distributed in Karsten, *Fungi Fennicae*, 912, and by the extended account by Maire, *Ann. Myc.* 7: 426–431, text f. 1, 2. 1909, but the latter species attains much larger size, has a coarser stem, and is infundibuliform with central stem. None of the collections of *S. tenerrimum* are composed wholly of specimens with infundibuliform

pilei and the stem central; the original collections have some specimens with pileus longer on one side than the other and stem eccentric; in more recent gatherings some specimens are even flabelliform. *S. tenerrimum* appears to be a distinct species.

Specimens examined:

New York: Croghan, *C. H. Peck* (in N. Y. State Mus. Herb.).

South Carolina: Society Hill, *H. W. Ravenel*, type (in Curtis Herb., 5029, and in Kew Herb.).

Wisconsin: Afton, *R. A. Harper*.

Cuba: Havana Province, *Huo Leon*, 1456 (in N. Y. Bot. Gard. Herb. and in Mo. Bot. Gard. Herb., 56307).

**13. *S. pergamenum* Berk. & Curtis, Grevillea 1: 161. 1873; Sacc. Syll. Fung. 6: 552. 1888; Masee, Linn. Soc. Bot. Jour. 27: 161. 1890; Lloyd, Myc. Writ. 4. Stip. Stereums, 27. text f. 545. 1913. Plate 2, fig. 12.**

An *Stereum nitidulum* Berkeley, Hooker's London Jour. Bot. 2: 638. 1843?

Type: type distribution in Ravenel, Fungi Car. 3: 25.

Fructifications somewhat cespitose and grown together, stipitate; pileus coriaceous, infundibuliform, sometimes split and petaloid, minutely lineate, drying hazel, obscurely zoned, the margin thin, often toothed or lacinate; stem cylindric, drying pinkish buff, very minutely tomentose; hymenium drying pinkish buff, glabrous; pileus in section 500  $\mu$  thick, composed of densely and longitudinally arranged hyaline hyphae 3  $\mu$  in diameter; flexuous, clavate, curved gloeocystidia, 50  $\times$  6  $\mu$ , extend into the hymenium but do not rise to its surface; cystidia none; spores hyaline, even, slightly flattened on one side, 4-4 $\frac{1}{2}$   $\times$  3-3 $\frac{1}{2}$   $\mu$ .

Fructifications 1 $\frac{1}{2}$ -4 cm. high, 8 mm.-3 cm. in diameter; stem 2-10 mm. long, 1-3 mm. in diameter.

On stumps or buried wood, perhaps rarely on the ground. Ohio and North Carolina to Mexico and in the West Indies. September to January.



Fig. 4.  
*S. pergamenum*.  
Gloeocystidia  
 $\times$  665.

*S. pergamenum* may be recognized by its occurrence in small clusters on wood at or near the surface of the ground, by small and nearly globose spores, and by the presence of gloeocystidia. It is probably more frequent in the West Indies than in the United States. When studying the specimens of this species in Kew Herbarium I compared with them the type of *Stereum nitidulum* Berk., collected by Gardner in Goyaz, Brazil, and concluded that it is probably the same species as *S. pergamenum*. In that early stage of my work I did not record the presence of gloeocystidia in the types of either *S. pergamenum* or *S. nitidulum*, and since I have no permanent preparation from the type of the latter, further, more critical study may show that it is a distinct species. The collection from Cuba, referred by Berkeley to *S. nitidulum*, has gloeocystidia and is referable to *S. pergamenum*.

Specimens examined:

Exsiccati: Ravenel, Fungi Car. 3: 25.

Ohio: Preston, *T. G. Gentry* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56301).

North Carolina: Blowing Rock, *G. F. Atkinson*, from Bot. Dept. of Cornell Univ., 4182.

Alabama: *J. M. Peters*, in Ravenel, Fungi Car. 3: 25, type distribution; *J. M. Peters*, 601 and another specimen (in Curtis Herb., the latter, Curtis Herb., 3814); *Beaumont*, 207 in part, the large zonate specimen mounted on left side of card with specimens of *S. Ravenelii* (in Curtis Herb., 4629 in part); Auburn, *F. S. Earle* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56306).

Louisiana: Ville Platte, *A. B. Langlois*, 2897.

Mexico: Motzorongo, near Cordoba, *W. A. & Edna L. Merrill*, 994 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 54596).

Cuba: *C. Wright*, 836 (in Curtis Herb., under the name *S. nitidulum* Berk.); Herradura, *F. S. Earle*, 545, and *N. L. Britton*, *E. G. Britton*, *F. S. Earle & C. S. Gager*, 6326 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56305 and 56263 respectively); Sumidero, *J. A. Shafer*, 13905 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56264).

San Domingo: Bonao, *J. A. Stevenson*, 7010 (in Mo. Bot. Gard. Herb., 55656).

14. *S. cristatum* Berk & Curtis, *Grevillea* 1: 163. 1873; Sacc. Syll. Fung. 6: 556. 1888; Masee, Linn. Soc. Bot. Jour. 27: 167. 1890; Lloyd, Myc. Writ. 4. Stip. Stereums, 38. 1913.

Type: in Kew Herb., not found by me in Curtis Herb. although sought for.

Pileus coriaceous, flabelliform or obliquely cyathiform, pallid to light bay-brown, somewhat zoned, glabrous and shining towards the margin, bearing a cluster of coarse hairs towards the base; stem, when present, cylindric, scarcely 2 mm. long; hymenium even, paler than the upper surface; in structure 200–250  $\mu$  thick, composed of longitudinally arranged and somewhat interwoven hyaline hyphae 3  $\mu$  in diameter; no cystidia; gloecystidia pyriform, 9–12  $\times$  7½  $\mu$ ; spores, as found in a crushed preparation, hyaline, even, 4  $\times$  2½  $\mu$ , few found—noted by Masee as subglobose, 5–6  $\mu$  in diameter.

Pileus 6–10 mm. across.

On dead *Vitis* in swamps. South Carolina.

Reexamination of my preparation of the type of *S. cristatum* fails to demonstrate that the pyriform organs in its hymenium are longitudinally septate; furthermore some of these organs are more elongated than stated above and irregular in form. For these reasons I regard the bodies as pyriform gloecystidia rather than possibly miniature basidia of the longitudinally septate type, the demonstrated presence of which would require transfer of this species to *Eichleriella*. The occurrence of *S. cristatum* on dead grape vines, the crest of coarse hairs towards the base of the pileus, the small size of the latter, and the pyriform organs in the hymenium are a good group of characters for identification of this species, although known so far only from the original collections.

Specimens examined:

South Carolina: Santee Swamp, *H. W. Ravenel*, Curtis Herb.



Fig. 5.

*S. cristatum*.

Gloeocystidia  $\times$  665. From type.

No. 2038, type and an *unnumbered specimen* (both in Kew Herb.).

15. *S. pallidum* (Pers.) Lloyd, Myc. Writ. 4. Stip. Stereums, 31. text f. 536, 550. 1913. Plate 3, fig. 13, 14.

*Craterella pallida* Persoon, Ic. et Descr. Fung. 1: 3. pl. 1. f. 3. 1798.—*Thelephora pallida* Persoon, Syn. Fung. 565. 1801; Myc. Eur. 1: 111. 1822; Fries, Hym. Eur. 633. 1874; Sacc. Syll. Fung. 6: 527. 1888.—*Helvella pannosa* Sowerby, Col. Figs. Eng. Fungi, pl. 155. 1788, in part.—*Thelephora pannosa* Sowerby ex Fries, in part, and *T. pannosa* var. *pallida* (Pers.) Fries, Syst. Myc. 1: 430. 1821.—*T. Sowerbeyi* Berkeley, Outlines Brit. Fungi, 266. 1860; Ann. & Mag. Nat. Hist. III. 15: 320. 1865; Fries, Hym. Eur. 633. 1874; Sacc. Syll. Fung. 6: 522. 1888.—*Stereum Sowerbeyi* (Berk.) Massee, Linn. Soc. Bot. Jour. 27: 164. 1890.—*Bresadolina pallida* (Pers.) Brinkmann, Ann. Myc. 7: 289. 1909.

Illustrations: Persoon, Ic. et Descr. Fung. 1: pl. 1. f. 3; Sowerby, Col. Figs. Eng. Fungi, pl. 155; Lloyd, Myc. Writ.

4. Stip. Stereums, text f. 536, 550.

Fructifications cespitose, laterally confluent, infundibuliform, coriaceous-spongy, rather thick, becoming cartridge-buff to cream-color in the herbarium, the upper side strigose-squamose; stem short, villose at the base; hymenium with slight, very obtuse, radial folds, under a lens more or less setulose with hyaline hairs; cystidia hair-like, not incrusting, cylindric, 6–8  $\mu$  in diameter, protruding 10–50  $\mu$  beyond the basidia, usually very numerous but sometimes only few found; spores hyaline, even, flattened on one side, 6–8  $\times$  4–5  $\mu$ .

Fructifications 1–3 cm. in diameter, 2–3 cm. high.

On the ground in woods. Vermont to North Carolina. July to November. Rare.

American specimens of *S. pallidum* agree well with the European specimen received from Bresadola, and, like the latter, are paler than the otherwise excellent figures of *Thelephora*



Fig. 6.

*S. pallidum*.  
Cystidium, basidium, and spores,  
 $\times 665$ . From  
Bresadola.

*pallida* in Persoon's 'Icones et Descriptiones Fungorum' already cited. Our specimens and that from Bresadola have the hymenium distinctly setulose with hair-like cystidia. Some of the specimens in Kew Herbarium under the name of *Thelephora Sowerbeyi* have hair-like cystidia, but these organs are few or absent in whole sections from other specimens. The original specimen of *Helvella pannosa* from Sowerby in Berkeley Herbarium at Kew has hair-like cystidia. I concluded that these cystidia are variable in abundance in English specimens and that *Thelephora Sowerbeyi* and *Helvella pannosa* as represented by the specimen from Sowerby should be kept with *Thelephora pallida*. Although the specific name *pannosa* of Sowerby was at first adopted by Fries, this was dropped later when Berkeley found this species, as understood by Sowerby, to be based upon a mixture of two species which were separated as *Thelephora Sowerbeyi* and *T. multizonata*; *T. pallida* has priority over *T. Sowerbeyi*.

*S. pallidum* may be distinguished from *T. Willeyi* forms of *S. diaphanum* by its occurrence in small conerescent clusters, by short villose or tomentose stem, and by thicker pileus with upper surface split radially into stiff straight fibrils.

Specimens examined:

Austria: *G. Bresadola*.

England: from Sowerby, under the name *Helvella pannosa* (in Kew Herb.); Cornwall, *C. Rea*, 1 (in Mo. Bot. Gard. Herb., 56241); Hereford, *Mrs. Wynne* (in Kew Herb., under the name *Thelephora Sowerbeyi*).

Vermont: Brattleboro, *C. C. Frost* (in Univ. Vermont Herb.); Grand View Mountain, *E. A. Burt*.

Connecticut: Waterbury, *C. C. Hanmer*, 1191.

North Carolina: Blowing Rock, *G. F. Atkinson*, comm. by Cornell Univ. Herb., 4192.

16. *S. elegans* (Meyer) Lloyd, Myc. Writ. 4. Stip. Stereums, 24. text f. 539. 1913. (Not *S. elegans* of earlier authors.)

Plate 3, fig. 15.

*Thelephora elegans* Meyer, Fl. Essequiboensis, 305. 1818; Fries, Syst. Myc. 1: 430. 1821; Epicr. 545. 1838. (But here abridged in an important respect so that following authors modified the description to apply to more common species).

An *T. macrorrhiza* L  veill  , Ann. Sci. Nat. Bot. III. 5: 146. 1818? See Lloyd, *loc. cit.*, p. 28.

Illustrations: Lloyd, *loc. cit.* Not by the figures under this name in other works, as Engl. & Prantl, Nat. Pflanzenfam., for example.

Fructifications cespitose, coriaceous, confluent, infundibuliform and deeply split on one side, or little developed on one side and prolonged and petaloid on the other; upper surface of pilei glabrous, radially plicate, drying diamine-brown, the margin paler and more or less lobed; stems solid, buffy brown, short, tomentose, branched above; hymenium radially plicate, nearly white, pruinose, often cracked; pileus in section 400  $\mu$  thick, composed of densely and longitudinally arranged, hyaline hyphae 3  $\mu$  in diameter; no cystidia; gloeocystidia 4½  $\mu$  in diameter, barely distinguishable from the basidia; spores hyaline, even, subglobose, 3½–4½  $\mu$  in diameter.

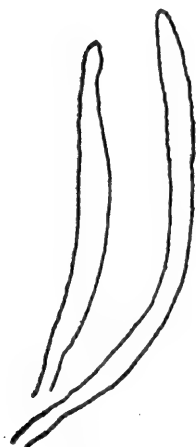


Fig. 7.  
*S. elegans*.  
Gloeocystidia  
× 665.

Fructifications 4–5 cm. high; pilei 1–2 cm. in diameter; stems about 1 cm. long, 1–2 mm. in diameter.

In a dense cluster of about 16 fructifications springing from an area of 2 square centimeters on the ground. Porto Rico to British Guiana. Summer.

I have not seen the type of *Stereum elegans* from Dutch Guiana nor reference to its existence; a collection from Porto Rico on which the preceding description is based has fructifications growing on the ground closely together and concrescent where in contact; the pilei are plicate on both surfaces and contrast so greatly in color that it seems as though fuscous in connection with the upper side and whitish flesh-color and pruinose for the under side might have been used for the color difference. The specimens of this collection are not zonate; infundibuliform without any qualification of this character does not seem accurate; hence it may be that this Porto Rican collection is merely near, rather than the true, *Stereum elegans*. However, solitary fructifications growing on wood, as figured in Engl. & Prantl, Pflanzenfam., are certainly a very different species from *S. elegans*, the original description of which is as follows:

"1. *Thelephora elegans*. nob.

"*T. subcaespitosa* infundibuliformis carnosu-coriacea plicata utrinque glabra, superne dilute fusco-fasciata, inferne albescenti-carnea pruinosa.

"Ad terram argillosam.

"Viget Junio.

"*Adumbr.* Pulchra species. Gregarie crescens, subcarnosa, tenuis, glabra. Pileus substipitatus, 1-2 uncialis, infundibuliformis, subcompressus, undulato-plicatus, margine irregulariter crenatus, interne rufescens, et fasciis dilute fuscis eleganter variegatus, nitens, externe albescenti-carneus, opacus, pruinosisus."

Specimens examined:

Porto Rico: Mayaguez, *B. Lopez Santiago*, 17 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56265).

17. *S. decolorans* (Berk. & Curtis) Lloyd, Myc. Writ. 4. Stip. Stereums, 36. 1913. Plate 3, fig. 234.

*Thelephora decolorans* Berkeley & Curtis, Linn. Soc. Bot. Jour. 10: 328. 1868; Sacc. Syll. Fung. 6: 530. 1888.—*Podoscypha decolorans* (Berk. & Curtis) Patouillard in Duss, Fl. Crypt. Antilles Fr. 231. 1904.

Type: in Kew Herb. and Curtis Herb.

Fructifications coriaceous, gregarious or somewhat cespitose, stipitate; pileus split on one side quite, or nearly, to the stem, usually wedge-shaped to broadly flabelliform, sometimes radially lineate, drying cinnamon; stem cylindric, colored like the pileus, tomentose, attached by a mycelium common to several fructifications; hymenium colored like the pileus and stem, sometimes lineate; pileus in section 200-400  $\mu$  thick, composed of densely and longitudinally arranged hyaline hyphae 3-3½  $\mu$  in diameter; no cystidia; gloeocystidia flexuous, 45-90  $\times$  3-6  $\mu$ , between the basidia or curving into the hymenium; spores hyaline, even, subglobose, 4-4½  $\times$  3-4  $\mu$ .

Fructifications 1-3 cm. long, 5-13 mm. broad; stem 2-10 mm. long, ½-1 mm. thick.

On dead wood. Jamaica to Trinidad. May to January.

*S. decolorans* is stated in the original description to have been white, drying ochraceous; I have seen only dried specimens which are pale cinnamon throughout. The occurrence of the

fan-shaped fructifications in clusters on dead wood, pale cinnamon color when dry, presence of gloeocystidia, and small subglobose spores constitute a group of characters by which dried specimens of *S. decolorans* may be distinguished from other species in our region.

Specimens examined:

Jamaica: *W. A. Merrill*, 1181 (in N. Y. Bot. Gard. Herb.).

Cuba: *C. Wright* 234, 248, type (in Kew Herb. and Curtis Herb.); Santiago de las Vegas, *Van Herman*, comm. by *F. S. Earle*, 257.

Trinidad: Carengo, *M. A. Carriker*, comm. by *W. G. Farlow*, 1.

**18. *S. radicans*** (Berk.) Burt, n. comb. Plate 3, fig. 16.

*Thelephora radicans* Berkeley, Hooker's London Jour. Bot. 3: 190. 1844; Berkeley & Curtis, Linn. Soc. Bot. Jour. 10: 329. 1868; Sacc. Syll. Fung. 6: 525. 1888.—*Podoscypha radicans* (Berk. & Curtis) Patouillard in Duss, Fl. Crypt. Antilles Fr. 230. 1904.

Type: in Kew Herb. probably.

"Plant  $1\frac{1}{2}$  inch high,  $\frac{3}{4}$  of an inch broad, spathulate or subinfundibuliform, split on one side and slightly lobed, minutely striate, with raised lines, tawny, coriaceous. Stem  $\frac{3}{4}$  of an inch high,  $1\frac{1}{2}$  line thick, incrassated at the base, and sending off strong branched roots. Hymenium nearly even, fuliginous; spores apparently fuliginous."

The above is the original description of the type specimens, collected in Surinam, Guiana, by Hostmann, 489. My knowledge of the species is based upon a later collection made in Cuba by *C. Wright* and determined by Berkeley. This specimen and the others cited below show well the longitudinal raised lines on the upper surface of the pileus, which is thicker than in related species, being  $1-1\frac{1}{4}$  mm. thick, and the hymenium  $100-200\ \mu$  thick; some specimens have dried with the upper surface pinkish buff and others from wood-brown to Verona-brown; hymenium even, wood-brown to fuscous; stem 10–15 mm. long, 3–4 mm. in diameter, sometimes radicated to reach buried wood; no cystidia nor gloeocystidia; spores hyaline, even, becoming minutely rough-walled and sometimes slightly angular,  $6\times 5\ \mu$ .

Specimens examined:

Cuba: *C. Wright*, 209, authentic (in Curtis Herb.).

Jamaica: Castleton Gardens, *W. A. & Edna L. Murrill*, 66, comm. by N. Y. Bot. Gard. Herb.

Trinidad: *R. Thaxter* (in Farlow Herb.).

Grenada: *W. E. Broadway*, September collection (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56316); St. George's, *W. E. Broadway* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56317).

British Honduras: *M. E. Peck* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56321).

19. *S. pusiolum* Berk. & Curtis, Linn. Soc. Bot. Jour. 10: 330. 1868; Sacc. Syll. Fung. 6: 558. 1888; Masee, Linn. Soc. Bot. Jour. 27: 168. 1890; Lloyd, Myc. Writ. 4: Stip. Stereums, 39. 1913. Plate 3, fig. 17.

Type: in Kew Herb. and Curtis Herb.

Fructifications gregarious, stipitate, coriaceous, curling in drying; pileus flabelliform or wedge-shaped, tapering to the stem, more or less split when large, minutely tomentose or hoary, white at first, drying smoke-gray, the margin thick and entire; stem short, solid, a little larger towards the base, colored like the pileus; hymenium even, mouse-gray, thick, contracting and sometimes cracking in drying; pileus in section 400–800  $\mu$  thick, composed of closely and longitudinally arranged hyaline hyphae  $2\frac{1}{2}$   $\mu$  in diameter; no cystidia, gloecystidia, nor conducting hyphae; spores hyaline, even, apiculate at base,  $4-5\frac{1}{2} \times 3-5$   $\mu$ .

Fructifications 1–2 cm. high, 1–15 mm. broad; stem 5–8 mm. long,  $\frac{1}{2}-1\frac{1}{2}$  mm. thick.

On clay ground. West Indies. November to March.

The white pileus, drying gray of nearly the shade of *Polyporus adustus*, minutely hairy, wedge-shaped, and without zonation, the much darker hymenium—dark as in *P. adustus*—the rather large spores, and the absence of gloecystidia afford a group of characters highly distinctive for *Stereum pusiolum*, the description of which I have changed materially from that published by the authors of the species. They disregarded Wright's note that the specimens were white and were collected on banks by roadside and published instead "rufobrunneum" and "on root-lets." The recent collections, cited below, which I have compared with the type, show also that the dimensions of the fructifications are usually much larger than those of the type collection.

## Specimens examined:

Cuba: *C. Wright*, 510, type (in Curtis Herb.); El Yunque, Baracoa, *L. M. Underwood & F. S. Earle*, 1087, 1141, comm. by N. Y. Bot. Gard. Herb., 1141 (in Mo. Bot. Gard. Herb., 56588).

Porto Rico: Rio Piedras, *J. R. Johnston*, 89 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56284).

**20. *S. glabrescens*** Berk. & Curtis, Linn. Soc. Bot. Jour. **10**: 330. 1868; Sacc. Syll. Fung. **6**: 558. 1888; Masee, Linn. Soc. Bot. Jour. **27**: 169. 1890; Lloyd, Myc. Writ. **4**. Stip. Stereums, 37. *text f. 558*. 1913. Plate 3, fig. 18.

Illustrations: Lloyd, *loc. cit.*

Type: in Kew Herb. and Curtis Herb.

Fructifications scattered, sometimes two from a common mycelial pad, stipitate; pileus flabelliform, zonate, minutely velvety, sometimes nearly glabrous, drying Verona-brown to chestnut, the margin paler, tapering behind into a short stem; stem lateral, nearly equal, velvety; hymenium even, concave, drying pinkish buff; no cystidia nor gloecystidia; spores hyaline, even,  $4-5 \times 3-4 \mu$ .

Pileus 5–20 mm. long, 5–20 mm. broad; stem 2–10 mm. long,  $\frac{1}{2}$ – $1\frac{1}{2}$  mm. thick.

On fallen twigs and mossy rotten wood. West Indies. May to September.

*S. glabrescens* has small, rather scattered fructifications, with firm, coriaceous, minutely velvety pileus and stem, small subglobose spores, and no cystidia, and it occurs on wood. Some collections are nearly glabrous. A mycelial pad is usually present at base of stem.

## Specimens examined:

Cuba: *C. Wright*, 520, type (in Curtis Herb.); Pinar del Rio, *J. A. Shafer*, 13906 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56298).

Porto Rico: Ponce, *F. S. Earle*, 163, comm. by N. Y. Bot. Gard. Herb.

Jamaica: Holymount, *L. M. Underwood*, 3427 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56299).

Dominica: Landat, *F. E. Lloyd*, 380, comm. by N. Y. Bot. Gard. Herb.

**21. *S. flabellatum*** Patouillard, Soc. Myc. Fr. Bul. **16**: 179. 1900; Sacc. Syll. Fung. **16**: 187. 1902; Lloyd, Myc. Writ. **4**. Stip. Stereums, 39. 1913.

*Podoscypha flabellata* Patouillard in Duss, Fl. Crypt. Antilles Fr. 231. 1904.

Pileus membranaceous, thin, expanded anteriorly, regularly attenuated posteriorly into a lateral stipe which is compressed; margin papyraceous, deeply incised or lobed; dorsal surface marked by slight puberulence of projecting hairs or crests which are slightly diverging or fan-shaped, not zonate; hymenium inferior, glabrous, even; stem becoming pubescent, short, enlarged at the base into a disk for attachment.

Fructification 4–6 cm. high; stem  $\frac{1}{2}$ –1 cm. long, 1–2 mm. thick. Fructification erect, spathulate, often confluent by the margin with neighbors, whitish when living, livid and pellucid upon drying.

On rotting wood on the ground. Guadeloupe.

The above is a translation of Patouillard's description. Lloyd saw a specimen in the museum at Berlin and states that the dried specimens are dark reddish bay.

**22. *S. fissum*** Berkeley, Hooker's Jour. Bot. **8**: 273. 1856; Massee, Linn. Soc. Bot. Jour. **27**: 169. 1890; Sacc. Syll. Fung. **11**: 120. 1895; Lloyd, Myc. Writ. **4**. Stip. Stereums, 37. *text f. 559*. 1913. Plate 3, fig. 19.

*S. Huberianum* P. Hennings, Hedwigia **41**: (15). 1902; **43**: 173. 1904.

Illustrations: Lloyd, *loc. cit.*

Type: in Kew Herb. and in Curtis Herb.

Pilei gregarious, occurring singly, sessile or short-stipitate, coriaceous, flabelliform or wedge-shaped, often divided into wedge-shaped segments, glabrous, even, not shining nor zonate, white when fresh, now reddish brown in the herbarium, attached by a flat mycelial pad; hymenium even; in structure 300–400  $\mu$  thick, composed of densely and longitudinally arranged hyaline hyphae 3  $\mu$ , or some 4  $\mu$ , in diameter; no cystidia nor gloeocystidia; the few detached spores found are hyaline, even,  $6 \times 4 \mu$ .

Pileus 8–15 mm. long, 3–15 mm. broad.

On dead twigs, Brazil.

*S. fissum* may yet be found as far north as the West Indies and Central America. The species is noteworthy by its occurrence on dead twigs in scattered, solitary, azonate fructifications which are often deeply split into segments, and by absence of cystidia and gloeocystidia.

Specimens examined:

Exsiccati: Ule, Myc. Brasil., 42, under the name *Stereum Huberianum*.

Brazil: Panure, Spruce, 27, type (in Curtis Herb.); Amazonas, Marmellos, and Jurná, E. Ule, in Ule, Myc. Brasil., 42.

23. *S. cyphelloides* Berk. & Curtis, Linn. Soc. Bot. Jour. 10: 331. 1868; Sacc. Syll. Fung. 6: 558. 1888; Masee, Linn. Soc. Bot. Jour. 27: 172. 1890; Lloyd, Myc. Writ. 4. Stip. Stereums, 35. 1913. Plate 3, fig. 20.

Type: in Kew Herb. and Curtis Herb.

Pileus small, flabelliform or spatulate, drying pinkish buff, longitudinally fibrillose, bibulous, the margin entire, narrowed behind into a short stem-like base; in structure up to 600  $\mu$  thick, composed of thin-walled, hyaline hyphae  $2\frac{1}{2}$ –3  $\mu$  in diameter, interwoven in the subhymenium; hymenium even, drying of same color as upper surface of pileus; no conducting organs, gloeocystidia, nor cystidia; spores hyaline, even,  $4\text{--}5 \times 3\text{--}3\frac{1}{2}$   $\mu$ .

Pileus 3–6 mm. wide, 5–7 mm. long.

On a bank among moss. West Indies. February and March.

*S. cyphelloides* differs from most Stereums in not having a hard compact structure, as in *S. rameale*, for example; it is of soft and bibulous texture but rather too thick for a *Cyphella*. The stem-like base is flattened in the same plane with the pileus and has the hymenium continued along its whole length, hence it is merely a narrowed portion of the pileus.

Specimens examined:

Cuba: C. Wright, 511, type (in Curtis Herb.).

Porto Rico: Monte Cerrote, near Adjuntas, N. L. Britton & Stewardson Brown, 5449 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56261).

24. *S. Hartmanni* (Mont.) Lloyd, Myc. Writ. 4. Stip. Stereums, 34. text f. 553. 1913. Plate 3, fig. 21.

*Thelephora Hartmanni* Montagne, Ann. Sci. Nat. Bot. II. 20: 366. 1843; Syll. Crypt. 176. 1856; Sacc. Syll. Fung. 6: 535. 1888.—*T. dissecta* Léveillé, Ann. Sci. Nat. Bot. III. 5: 146. 1846; Sacc. Syll. Fung. 6: 531. 1888; Lloyd, *loc. cit.*, 39.

Illustrations: Lloyd, *loc. cit.*

Type: authentic specimen from Montagne in Kew Herb.

Pilei solitary or cespitose, sessile or barely stipitate, coriaceous, thin, white, wedge-shaped, deeply cleft into narrow segments which are more or less pectinate along their margins and apex and have these teeth-like portions incurved; no cystidia; no gloeocystidia; spores hyaline, even, subglobose,  $4-5 \times 3\frac{1}{2}-4 \mu$ .

Pileus 7–50 mm. long, 5–40 mm. broad.

On decaying wood and bark and dead herbaceous stems. Carolina to Bolivia. July to September in West Indies and February in Bolivia.

The pilei of *S. Hartmanni* occur in small tufts of two or three in the specimens which have been seen; they are very dainty and unique by the narrow pectinate margins and tips which are more or less incurved; rarely these teeth occur on the lower surface of segments of the pileus in a manner suggestive of teeth of an *Irpex* but they are in most cases marginal. The maximum dimensions of the pileus are from the Porto Rican collection; the other specimens do not have pilei more than 2–3 cm. long. I have not seen the type of *Thelephora dissecta* Lév., which was collected in Guadeloupe; the description agrees so well with *S. Hartmanni* that I have followed Lloyd's conclusion that *T. dissecta* is a synonym of *S. Hartmanni*.

Specimens examined:

Carolina: *Hartmann*, authentic, from Montagne (in Kew Herb.).

Porto Rico: Luquillo Mountain, *P. Wilson*, 313 (in N. Y. Bot.

Gard. Herb. and Mo. Bot. Gard. Herb., 56302).

St. Kitt's: *N. L. Britton & J. F. Cowell*, 706, comm. by N. Y. Bot. Gard. Herb.

Bolivia: *R. E. Fries*, 272, comm. by L. Romell, 447 (in Mo. Bot. Gard. Herb., 54780).

**25. *S. craspedium* (Fries) Burt, n. comb.** Plate 3, fig. 22.

*Thelephora (Merisma) craspedia* Fries, R. Soc. Sci. Upsal. Actis III. 1: 108. 1851; Sacc. Syll. Fung. 6: 533. 1888; Lloyd, Myc. Writ. 4. Stip. Stereums, 34. 1913.

Type: a fragment in Kew Herb., according to Lloyd.

Erect, cespitose, membranaceous-soft, fragile when dry, palmately branched, complanate, ribbed, dilated above, lacerate-fimbriate at the apex; hymenium definitely inferior, pallid gilvus; spores white.

In pine woods, Pico de Orizaba, 10,000 ft. altitude, Mexico. Collected by Liebman.

An extraordinary species, similar to *Thelephora tuberosa* and *Tremellodendron pallidum* but with the substance thin, somewhat membranaceous, fragile when dry, and with the pileus foliaceous-complanate, ribbed (ribs commonly simple as in *Alaria*), very distinct. More than an inch high. Hymenium occupying the whole lower surface, at length floccose-collapsing and often foveolate, almost porose; basidia evidently 4-spored.

The above is a translation of the original description. I did not find the type in Herb. Fries at Upsala nor see the fragment which Lloyd has reported as preserved at Kew.

The specimen from Dutch Guiana, which is cited below, is so similar in aspect to *Tremellodendron pallidum* that it is probably *S. craspedium*. This cluster is 7 cm. in diameter and 3-4 cm. high, and agrees well with details of the original description. The basidia are simple, only detached spores found. These are hyaline, even, globose, 3  $\mu$  in diameter.

Specimens examined:

Dutch Guiana: *Jacob Samuels* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56300).

**26. *S. petalodes*** Berkeley, Ann. & Mag. Nat. Hist. II. 9: 198. 1852; Sacc. Syll. Fung. 6: 557. 1888; Masee, Linn. Soc. Bot. Jour. 27: 165. 1890; Lloyd, Myc. Writ. 4. Stip. Stereums, 32. text f. 551. 1913. Plate 3, fig. 23.

Illustrations: Lloyd, loc. cit.

Type: in Kew Herb. according to Lloyd.

Pileus coriaceous, sessile, at first infundibuliform, soon split into numerous lobes which are again more or less divided, dull reddish brown, marked with long grooves or striae; hymenium pale, much cracked, sometimes so much so as to be nearly granulated.

San Domingo. Coll., *Salle*, 52.

The above is the original description of *S. petalodes*, a species of which I have seen no specimen. Lloyd's figure of the type shows the fructification to be a rosette-shaped mass 4 cm. high and 6 mm. in diameter, composed of many elongated pileate flaps, each of which is flattened and up to 7 mm. broad. No record was published by Berkeley as to whether *S. petalodes* grows on ground or on wood.

**27. *S. anastomosans*** (Berk. & Curtis) Lloyd, Myc. Writ. 4. Stip. Stereums, 35. 1913.

*Thelephora anastomosans* Berkeley & Curtis, Linn. Soc. Bot. Jour. 10:329. 1868; Sacc. Syll. Fung. 6:534. 1888.

Type: in Curtis Herb. and Kew Herb.

Fructification stipitate, white, with the pileus divided into many segments; pileate branches and branchlets more or less laterally grown together above, somewhat flabeliform and fimbriate, below more or less distinct or confluent into the common stem; hymenium even, inferior; no cystidia nor gloecystidia; spores copious, hyaline, even, subglobose,  $4-4\frac{1}{2} \times 3\frac{1}{2}-4 \mu$ .

Fructifications about  $2\frac{1}{2}$  cm. high.

On stump. Cuba. October.

It was noted by the authors of the species that *S. anastomosans* is allied to *S. craspedium*, but the divisions of its pileus are narrower than I understand them to be in the latter. *S. anastomosans* is somewhat suggestive of *S. Hartmanni* and *S. proliferum* but differs in having many pileate divisions grow out from a common trunk so as to form a rosette-like mass, as in doubled forms of *Thelephora caryophyllea*.

Specimens examined:

Cuba: C. Wright, 280, type (in Curtis Herb.).

**28. *S. proliferum*** (Berk.) Lloyd, Myc. Writ. 4. Stip. Stereums, 34. text f. 554. 1913. Plate 4, fig. 24.

*Thelephora prolifera* Berkeley, Hooker's Jour. Bot. 8:272. 1856; Sacc. Syll. Fung. 6:542. 1888.

Illustrations: Lloyd, loc. cit.

Type: in Kew Herb. and Curtis Herb.



Fig. 8.  
*S. anastomosans*.  
Spores  $\times 665$ .  
From type.

Fructifications cespitose, stipitate, coriaceous, erect, white, now between light buff and cartridge-buff throughout; stem cylindric, branched above, the branches either slender, cylindric, sterile bodies, or flattened, membranous pilei 1–2 mm. broad, 1–1½ cm. long; hymenium on the lower side, even; a few detached spores hyaline, even,  $3\frac{1}{2} \times 3 \mu$ , none found on basidia.

Fructifications about 3 cm. high; stems  $\frac{1}{2}$  mm. in diam.; pileate branches 1–1½ cm. long, 1–2 mm. broad.

On roots of trees. Brazil.

Berkeley described *S. proliferum* as somewhat creeping and having the branches with tips attached again to the matrix by means of large, orbicular, radiated and lacinated disks. These characters should render this species easy for the collector to recognize, but the herbarium specimen which I studied did not show the above feature noticeably; it had somewhat the aspect of *S. Hartmanni* but without the pectinate margins of the latter. The hymenium of the specimen studied is in poor condition and the spore characters, as given above, are uncertain. I studied for N. Y. Bot. Gard. Herb., No. 508, a fungus collected at Church Cove, Bermuda, which has the general aspect of *S. proliferum* but with spores hyaline, even,  $13\text{--}16 \times 6\text{--}7 \mu$ , and is probably a distinct species. Still it is well to keep *S. proliferum* in mind in connection with species of the West Indies.

Specimens examined:

Brazil: Rio Negro, *Spruce*, 17, type (in Curtis Herb.).

**29. *S. caespitosum* Burt, n. sp.**

Plate 4, fig. 25.

Type: in Burt Herb.

Fructifications coriaceous, thin, cespitose, effuso-reflexed, with the resupinate portion small and bearing a cluster of broader and longer, imbricate, pileate lobes which are somewhat furfuraceous or with minute tomentum on the upper side, glabrate towards the margin, drying tawny and zonate with ochraceous, tawny zones, the margin entire; hymenium even, whitish to light buff; in structure 500–700  $\mu$  thick, with the intermediate layer bordered above by a narrow, slightly colored zone and composed of densely longitudinally arranged, hyaline, thick-walled hyphae  $3\frac{1}{2} \mu$  in diameter; hymenial layer up to 120  $\mu$  thick, containing numerous slender, flexuous gloeocystidia

$3\frac{1}{2}$ – $5\ \mu$  in diameter near the base, tapering outward; no colored conducting organs nor noteworthy paraphyses; spores hyaline, even,  $4\text{--}4\frac{1}{2} \times 3\text{--}3\frac{1}{2}\ \mu$ , copious.

Resupinate portion covers area  $6 \times 5$  mm., reflexed lobes 5–10 mm. in diameter—about 10 in the cluster.

On broken lateral stub of dead limb of a frondose species. Jamaica. January. Probably rare.

Viewed from above, *S. caespitosum* has the general aspect and coloration of species of *Stereum* in sections having stems, as *S. pergamenum* and *S. decolorans*, but is excluded from these sections by attachment to the substratum by a distinctly resupinate portion. The species is unique in the effuso-reflexed section in the above resemblance, and with additional characters of clustered, imbricated habit of growth and presence of gloeocystidia, should be readily recognized.

Specimens examined:

Jamaica: Moneague to Union Hill, *W. A. Merrill*, 1181, type, comm. by N. Y. Bot. Gard. Herb.

**30. *S. fuscum*** Schrader ex Quelet, *Fl. Myc. France*, 14. 1888; Bresadola, *I. R. Accad. Agiati Atti III*. 3: 106. 1897.

Plate 4, fig. 26.

*Thelephora fusca* Schrader, *Spic. Fl. Germ.* 184. 1794; Persoon, *Syn. Fung.* 568. 1801, and *Myc. Eur.* 1: 122. 1822 (in both places renaming the species *T. bicolor*); Fries, *Syst. Myc.* 1: 438. 1821 (following Persoon).—*T. bicolor* Persoon, *Syn. Fung.* 568. 1801; Fries, *Syst. Myc.* 1: 438. 1821.—*Stereum bicolor* Persoon, *Myc. Eur.* 1: 122. 1822 (under \*\*\*\* *Stereum* of *Thelephora*); Fries, *Epicr.* 549. 1838; *Hym. Eur.* 640. 1874; Morgan, *Cincinnati Soc. Nat. Hist. Jour.* 10: 195. 1888; *Sacc. Syll. Fung.* 6: 565. 1888; Masee, *Linn. Soc. Bot. Jour.* 27: 177. 1890.—*S. coffeatum* Berk. & Curtis, *Grevillea* 1: 164. 1873; *Sacc. Syll. Fung.* 6: 568. 1888; Masee, *Linn. Soc. Bot. Jour.* 27: 190. 1890.

Illustrations: Fries, *Icones Hym. pl.* 197. f. 2; Karsten, *Icones Hym. pl.* 2. f. 9.



Fig. 9.  
*S. caespitosum*.  
Gloeocystidia  
and spores  $\times$   
665.  
From type.

Fructifications somewhat membranaceous, soft, spongy, sometimes resupinate, usually becoming conchate-reflexed, often imbricated, villose, becoming glabrous,

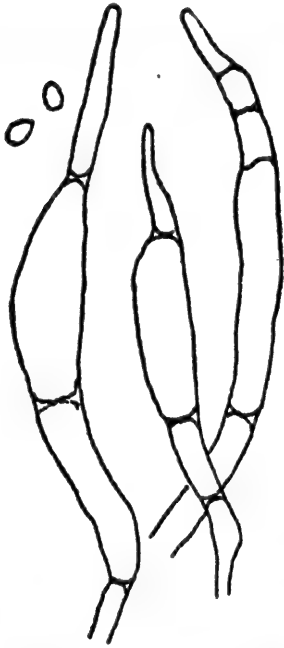


Fig. 10. *S. fuscum*.  
Gloeocystidia and spores  
 $\times 665$ .

somewhat concentrically sulcate, drying snuff-brown to bister; hymenium even, glabrous, white, drying cream-color to pallid mouse-gray; in structure  $1000\ \mu$  thick, composed of longitudinally and loosely interwoven hyphae  $3\ \mu$  in diameter, colored towards the upper surface, hyaline towards the hymenium; hymenium not zonate, containing flexuous gloecystidia  $20-60 \times 5-7\ \mu$ , rarely  $90\ \mu$ , long; spores hyaline,  $3-4\frac{1}{2} \times 2-3\ \mu$ .

Reflexed pileus 1-4 cm. long, 2-5 cm. wide; resupinate specimens  $3-10 \times 1-3$  cm.

On rotting frondose limbs usually, but sometimes on pine. Canada to Texas, westward to Oregon, in the West Indies, and also in Europe. April to December. Not rare.

Reflexed specimens of *S. fuscum* may be recognized at sight by the soft, pliant pileus, brown and felt-like above, with a white hymenium. Gloecystidia are so rare in the hymenium of a *Stereum* that their presence in abundance in this species affords a decisive specific character. Wholly resupinate specimens have the color of the hymenium of reflexed fructifications and have similar consistency and gloecystidia. So many reflexed species occur resupinate that one should be sure to gather the more or less reflexed fructifications which can usually be secured associated with the resupinate specimens. Since both Persoon and Fries recognized the priority of Schrader's specific name *fuscum* and substituted *bicolor*, presumably because highly distinctive and appropriate for the species, the restoration of the original name by recent mycologists seems just.

Specimens examined:

Exsiccati: Ellis, N. Am. Fungi, 1207; Ell. & Ev., Fungi Col., 1019; Rabenhorst, Fungi Eur., 3233; Ravenel, Fungi Am., 9; Ravenel, Fungi Car. 2: 33; de Thümen, Myc. Univ., 1704.

Finland: Mustiala, *P. A. Karsten*, in de Thümen, *Myc. Univ.*, 1704.

Sweden: Femsjö, *L. Romell*, 402.

England: Selby, *E. A. Burt*.

France: Allier, *H. Bourdot*, 16141.

Hungary: *Kmet*, comm. by *G. Bresadola*.

Canada: *J. Macoun*, 76, 280.

Ontario: Ottawa, *J. Macoun*, 21, 59; Toronto, *J. H. Faull*, *Univ. Toronto Herb.*, 361 (in *Mo. Bot. Gard. Herb.*, 44863).

Vermont: Middlebury, *E. A. Burt*; North Ferrisburg, *E. A. Burt*.

New York: Bronx Park, New York, *H. D. House* (in *N. Y. State Mus. Herb. and Mo. Bot. Gard. Herb.*, 54392), and *W. A. Murrill* (in *N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb.*, 56773); Staten Island, *W. H. Ballou* (in *Burt Herb.*, *N. Y. Bot. Gard. Herb.*, and *Mo. Bot. Gard. Herb.*, 56774); Syracuse, *D. C. Mills* (in *N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb.*, 56281).

Pennsylvania: Kittanning, *D. R. Sumstine*; West Chester, *Everhart & Haines*, in *Ellis*, *N. Am. Fungi*, 1207.

District of Columbia: *C. L. Shear*, 1039; Takoma Park, *C. L. Shear*, 954.

South Carolina: *H. W. Ravenel*, in *Ravenel*, *Fungi Car.* 2: 33; Santee Canal, *H. W. Ravenel*, 910 (in *Curtis Herb.*), and *Curtis Herb.*, 2923, type of *Stereum coffeatum* (in *Kew Herb.*); Salem, *Schweinitz* (in *Herb. Schweinitz*).

Georgia: Atlanta, *E. Bartholomew*, 5680 (in *Mo. Bot. Gard. Herb.*, 44219); Tipton, *C. J. Humphrey*, 156.

Florida: Gainesville, *H. W. Ravenel*, in *Ravenel*, *Fungi Am.*, 9; Lake City, *P. L. Ricker*, 898; New Smyrna, *C. G. Lloyd*, 2118.

Alabama: Auburn, *L. M. Underwood*, comm. by U. S. Dept. Agr. Herb., *F. S. Earle* (in *Mo. Bot. Gard. Herb.*, 5058), and *F. S. Earle & C. F. Baker*; Fayette Co., *P. V. Siggers*, comm. by *A. H. W. Povah*, 15 (in *Mo. Bot. Gard. Herb.*, 9226); Montgomery Co., *R. P. Burke*, 33 (in *Mo. Bot. Gard. Herb.*, 15763).

Mississippi: Chicou (in *Mo. Bot. Gard. Herb.*, 43014).

Louisiana: Abita Springs, *A. B. Langlois*; New Orleans, *F. S.*

- Earle* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56775); St. Martinville, *A. B. Langlois*, bz, 2095, and a specimen comm. by Lloyd Herb., 2737.
- Texas: San Antonio, *W. H. Long*, 21703 (in Mo. Bot. Gard. Herb., 55164).
- Ohio: *A. P. Morgan* (in Lloyd Herb.) and *C. G. Lloyd*, in Ell. & Ev., Fungi Col., 1019; Linwood, *C. G. Lloyd*, 1154, 1326; Norwood, *C. G. Lloyd*, V.
- Indiana: Greencastle, *L. M. Underwood* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56276, 56278); Hibernian Mills, *Whetzel & Reddick*, comm. by D. Reddick, 3.
- Wisconsin: Madeline Island, *V. B. Walker*, 6a (in Mo. Bot. Gard. Herb., 8359); Madison, *Miss A. O. Stucki*, 26.
- Missouri: Marianna, *H. von Schrenk* (in Burt Herb. and Mo. Bot. Gard. Herb., 42836); Oran, *H. von Schrenk* (in Mo. Bot. Gard. Herb., 42835); Perryville, *C. H. Demetrio*, in Rabenhorst, Fungi Eur., 3233; Williamsville, *B. M. Duggar*, 482.
- Arkansas: Cass, *W. H. Long*, 19923 (in Mo. Bot. Gard. Herb., 13266); Levisque, *P. Spaulding* (in Mo. Bot. Gard. Herb., 5057).
- Idaho: Kooskia, *J. R. Weir*, 589 (in Mo. Bot. Gard. Herb., 56776).
- British Columbia: Agassiz, *J. R. Weir*, 603 (in Mo. Bot. Gard. Herb., 36748).
- Oregon: Corvallis, *C. E. Owens*, 2037 (in Mo. Bot. Gard. Herb., 43871).
- Cuba: Alto Cedro, *L. M. Underwood & F. S. Earle*, 1571, 1581, comm. by N. Y. Bot. Gard. Herb.; Baracoa, *L. M. Underwood & F. S. Earle*, 504, comm. by N. Y. Bot. Gard. Herb.
- Jamaica: Cinchona, *W. A. & E. L. Murrill*, 462, comm. by N. Y. Bot. Gard. Herb.; Hope Gardens, *F. S. Earle*, 500, comm. by N. Y. Bot. Gard. Herb.; Mandeville, *A. E. Wight*, comm. by W. G. Farlow; Troy and Tyre, *W. A. Murrill & W. Harris*, 1073, comm. by N. Y. Bot. Gard. Herb.

31. *S. rufum* Fries, Epier. 553. 1838; Hym. Eur. 644. 1874; Sacc. Syll. Fung. 6: 575. 1888; Romell, Bot. Not. 1895: 71. 1895.

Plate 4, fig. 27.

*Thelephora rufum* Fries, Elenchus Fung. 1:187. 1828.—*Cryptochaete rufa* (Fries) Karsten, Finska Vet.-Soc. Bidrag Natur och Folk 48:408. 1889.—*Tubercularia pezizoidea* Schweinitz, Am. Phil. Soc. Trans. N. S. 4:301. 1832; Sacc. Syll. Fung. 4:644. 1886.—*Hypocrea Richardsonii* Berkeley & Montagne, Grevillea 4:14. 1875; Sacc. Syll. Fung. 2:528. 1883; Ellis & Everhart, N. Am. Pyrenomycetes, 86. 1892.—*Corticium pezizoideum* (Schw.) von Schrenk, Torr. Bot. Club Bul. 21:385. pl. 218. 1894.

Illustrations: von Schrenk, Torr. Bot. Club Bul. 21:pl. 218. 1894.

Type: in Herb. Fries.

Fructifications scattered or gregarious, coriaceous-fleshy, bursting out from the bark, verruciform, plicate-tuberculose,

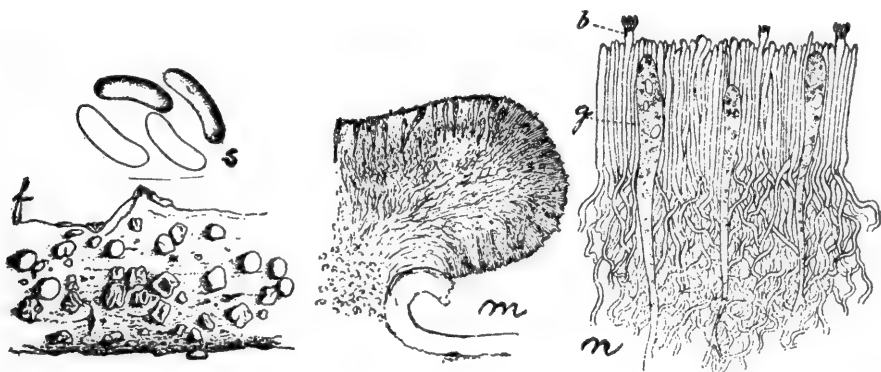


Fig. 11. *S. rufum*. Fructifications, *f*; section of fructification, *m*; section of hymenial region, *n*; spores, *s*. After von Schrenk.

peltate, vinaceous-brown to hematite-red, under side glabrous, the margin free all around; hymenium becoming coarsely wrinkled, vinaceous-brown, often grayish pruinose; in structure 1–2 mm. thick at the center, 600–800  $\mu$  thick in the marginal portion, composed of ascending, loosely interwoven, incrustated, hyaline hyphae 4–4½  $\mu$  in diameter over the incrustation; flexuous gloeocystidia 50–90  $\times$  7–10  $\mu$  are scattered in or near the hymenium but not protruding; spores white in spore collection, even, curved, 6–8  $\times$  1½–2  $\mu$ .

Fructifications 2–4 mm. in diameter.

On dead fallen *Populus tremuloides*. Newfoundland to Massachusetts and westward to North Dakota and Colorado. March to December. Common. Occurs in Scandinavia also.

*S. rufum* may be recognized at sight by its occurrence on prostrate poplar limbs and logs in the form of small vinaceous fructifications with the hymenium gyrosely wrinkled. The fructifications become peltate when full grown, attached by the center, and with the marginal portions free and turned outward.

Specimens examined:

Exsiccati: Bartholomew, Fungi Col., 1817, under the name *Corticium rufo-marginatum*, and 2716; Ellis, N. Am. Fungi, 1329; Romell, Fungi Scand. Exs., 123; Shear, N. Y. Fungi, 88.

Norway: Christiania, *M. N. Blytt*, authentic specimen (in Herb. Fries).

Sweden: Stockholm, *L. Romell*, in Romell, Fungi Scand. Exs., 123; Upsala, *L. Romell*, 39.

Newfoundland: *B. L. Robinson & H. von Schrenk* (in Mo. Bot. Gard. Herb., 42944); Bay of Islands, *A. C. Waghorne* (in Mo. Bot. Gard. Herb., 17692).

Ontario: Toronto, *T. Langton*, Univ. Toronto Herb., 595 (in Mo. Bot. Gard. Herb.).

Maine: Orono, *F. L. Harvey*, 6 (in Mo. Bot. Gard. Herb., 16620); Portage, *L. W. Riddle*, 10.

New Hampshire: Shelburne, *W. G. Farlow* (in Mo. Bot. Gard. Herb., 14796).

Vermont: Middlebury, *E. A. Burt*, two collections; North Ferrisburg, *E. A. Burt*.

Massachusetts: Peabody, *A. R. Sweetser*; Waverley, *H. von Schrenk* (in Mo. Bot. Gard. Herb., 16623).

New York: Alcove, *C. L. Shear*, in Shear, N. Y. Fungi, 88; East Galway, *E. A. Burt*; Ithaca, *G. F. Atkinson* (in Mo. Bot. Gard. Herb., 4775); Willsboro Point, *C. O. Smith*, in Bartholomew, Fungi Col., 1817.

Pennsylvania: Trexlertown, *W. Herbst*.

Michigan: Mackinac Island, *E. T. & S. A. Harper*, 707; Northport, *H. von Schrenk* (in Mo. Bot. Gard. Herb., 22481).

Wisconsin: La Crosse, *W. Trelease* (in Mo. Bot. Gard. Herb., 14794); Madison, *W. Trelease*, in Ellis, N. Am. Fungi, 1329, and (in Mo. Bot. Gard. Herb., 14794, 16621); Palmyra, *Miss A. O. Stucki*, 27; Syene, *W. Trelease*, 3022 (in Mo. Bot. Gard. Herb., 14793).

Nebraska: Lincoln, Miss L. B. Walker, 7 (in Mo. Bot. Gard. Herb., 44818).

North Dakota: Fargo, F. J. Seaver, 25, 54 (in Mo. Bot. Gard. Herb., 16222, 16637).

Montana: Helena, F. W. Anderson, 202 (in Mo. Bot. Gard. Herb., 21165).

Colorado: Blind Cañon Placer, C. L. Shear, 1021; Golden, E. Bartholomew & E. Bethel, in Bartholomew, Fungi Col., 2716, and E. Bethel & L. O. Overholts, comm. by L. O. Overholts, 1754 (in Mo. Bot. Gard. Herb., 54875); Ouray, C. L. Shear, 1187.

32. *S. Pini* Fries, Epicr. 553. 1838; Hym. Eur. 643. 1874; Sacc. Syll. Fung. 6: 574. 1888. Plate 4, fig. 28.

*Thelephora Pini* Fries, Syst. Myc. 1: 443. 1821; Elenchus Fung. 1: 187. 1828.—*Sterellum Pini* (Schleich.) Karsten, Finska Vet.-Soc. Bidrag Natur och Folk 48: 405. 1889.

Illustrations: Smith, Brit. Basidiomycetes, text f. 98 E, F.

Fructifications gregarious, coriaceous-cartilaginous, orbicular, resupinate, with the margin free and attached by the center, shield-shaped, finally bullate, drying rigid, Benzo-brown; hymenium wood-brown to Benzo-brown, somewhat pruinose, becoming somewhat

tuberculose; in structure 500  $\mu$  thick, thinning out towards the margin, with the intermediate layer bordered on each side by a narrow, colored zone and composed of longitudinally arranged, densely interwoven, hyaline hyphae with walls gelatinously

modified, the subhymenium olivaceous-colored; cystidia incrusted,  $24 \times 8 \mu$ , sometimes very few to be found; fusoid or irregular gloeocystidia,  $30-40 \times 10-15 \mu$ , are sparingly present in or near the hymenium; spores hyaline, even, curved,  $5-6 \times 2-2\frac{1}{2} \mu$ .

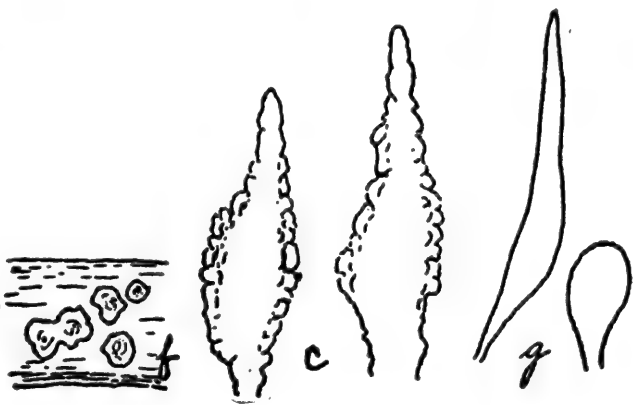


Fig. 12. *S. Pini*. Fructifications, f, natural size; cystidia, c, and gloeocystidia, g,  $\times 665$ .

Fructifications 1–4 mm. in diameter.

On bark of fallen limbs of *Pinus resinosa*. Maine and New Hampshire. August. Rare.

The fructifications are so near the color of the bark of the dead pine limbs upon which they grow that they are likely to be overlooked, or, if collected, roughly classed among the *Discomycetes* on account of their resemblance to these fungi in aspect. The occurrence on pine bark, small, shield-shaped fructifications Benzo-brown in color, and showing in section both cystidia and gloeocystidia are a combination of characters which should not fail to identify this species.

Specimens examined:

Exsiccati: Krieger, Fungi Sax., 364; Rabenhorst, Herb. Myc., 213.

Finland: Mustiala, *P. A. Karsten*.

Sweden: Stockholm, *L. Romell*, 32.

Germany: Dresden, in Rabenhorst, Herb. Myc., 213; Königs-  
tein, Saxony, *W. Krieger*, in Krieger, Fungi Sax., 364.

France: St. Priest, Allier, *H. Bourdot*, 15067.

Maine: *J. Blake*, 659 (in Curtis Herb.).

New Hampshire: Chocorua, *W. G. Farlow*, 37.

**33. *S. purpureum*** Persoon, Roemer Neues Mag. Bot. 1: 110. 1794; Obs. Myc. 2: 92. 1799; Fries, Epicr. 548. 1838; Hym. Eur. 639. 1874; Berkeley, Brit. Fung. 270. 1860; Morgan, Cincinnati Soc. Nat. Hist. Jour. 10: 194. 1888; Sacc. Syll. Fung. 6: 563. 1888; Masee, Linn. Soc. Bot. Jour. 27: 186. 1890. Plate 4, fig. 29.

*Thelephora purpurea* Persoon, Syn. Fung. 571. 1801; Myc. Eur. 1: 121. 1822; Fries, Syst. Myc. 1: 440. 1821.—*Stereum vorticolum* Fries, Obs. Myc. 2: 275. 1818; Epicr. 548. 1838; Hym. Eur. 639. 1874; Sacc. Syll. Fung. 6: 563. 1888.

Illustrations: Fl. Danica 3: pl. 534. f. 4; Hussey, Ill. Br. Myc. pl. 20. f. A; Istvanffi, Jahrbüch. f. wiss. Bot. 29: pl. 6. f. 37–39; Lanzi, Fungi di Roma, pl. 11. f. 2; Sowerby, Col. Figs. Eng. Fungi, pl. 388. f. 1.

Type: authentic specimen from Persoon in Kew Herb.

Fructifications coriaceous-soft, drying rigid, sometimes resupinate, usually more or less reflexed, often imbricated, the

upper side villose-tomentose, light buff to cartridge-buff, the margin entire; hymenium even, glabrous, light purple-drab to dark vinaceous-drab; in structure about  $500\text{--}800\ \mu$  thick excluding the tomentum, with the intermediate layer more loosely arranged on its under side in the subhymenial region and containing pyriform, or subglobose, vesicular organs  $15\text{--}30 \times 12\text{--}25\ \mu$ ; no cystidia; spores hyaline, even, flattened on one side,  $5\text{--}7 \times 2\frac{1}{2}\text{--}3\ \mu$ .

Fructifications with resupinate portion about 1–2 cm. in diameter; reflexed portion 5–20 mm. broad, and sometimes crisped or lobed with lobes 5 mm. in diameter.

On dead stumps and logs of *Populus*, *Betula*, and other frondose species. Newfoundland to Delaware and westward to British Columbia and Oregon, also in Uruguay and in Europe. June to April. Common but not ranging into torrid regions.

*S. purpureum* is usually recognized by its buff, tomentose pileus, purplish hymenium which does not bleed when wounded, and occurrence on poplar. Sectional preparations show characteristic vesicular organs in the subhymenial region, such as are present in the closely related *S. rugosiusculum*, but no hair-like cystidia in the hymenium, by the absence of which *S. purpureum* is distinguished from the latter.

The authentic specimen of *S. vorticosum* in Herb. Fries at Upsala is  $2\text{--}3 \times 1\frac{1}{2}$  cm., narrowly reflexed, with dark purplish hymenium, and with the usual microscopic structure and spores of *S. purpureum*.

#### Specimens examined:

Exsiccati: Bartholomew, Fungi Col., 3489; Berkeley, Brit. Fungi, 147; Cooke, Fungi Brit., 12; Ell. & Ev., N. Am. Fungi, 2018, 2601; Klotzsch, Fungi Germ., 50; Krieger, Fungi Sax., 1852; Rabenhorst, Herb. Myc., 504; Romell, Fungi Scand. Exs., 27; Shear, N. Y. Fungi, 311.

Europe: authentic specimen of *Thelephora purpurea* from Persoon (in Herb. Hooker in Kew Herb.).

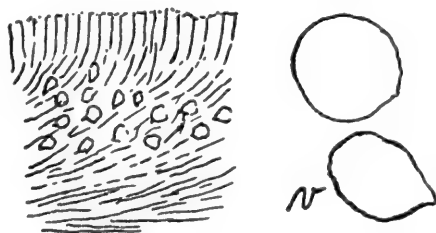


Fig. 13. *S. purpureum*. Section of hymenial region  $\times 90$ , and vesicular bodies  $\times 665$ . From authentic specimen.

- Sweden: *E. Fries* (in Kew Herb.); Femsjö, authentic specimen of *Stereum vorticosum* (in Herb. Fries); Stockholm, *L. Romell*, 34, 288, and in Romell, *Fungi Scand. Exs.*, 27.
- England: *M. J. Berkeley*, in Berkeley, *Brit. Fungi*, 147; Hampstead, *M. C. Cooke*, in Cooke, *Fungi Brit.*, 12.
- France: Corrombles, comm. by Lloyd Herb., 3355; St. Priest, Allier, *H. Bourdot*, 12459, 12461.
- Germany: *Klotzsch*, in Klotzsch, *Fungi Germ.*, 50; Dresden, in Rabenhorst, *Herb. Myc.*, 504; Winterberge, *Wagner & Krieger*, in Krieger, *Fungi Sax.*, 1852.
- Austria: *Stapf*, *Fl. Exs. Austro-Hungarica*, 3543 (in Mo. Bot. Gard. Herb., 5125, 715171).
- Italy: Trento, *G. Bresadola*.
- Newfoundland: Bay of Islands, *A. C. Waghorne*, 20, 86 (in Mo. Bot. Gard. Herb., 5091, 5092).
- Ontario: Harraby, *E. T. & S. A. Harper*, 641; Ottawa, *J. Macoun*, 17, 39; *J. M. Macoun*, comm. by N. Y. State Mus. Herb. (in Mo. Bot. Gard. Herb., 56085); Port Credit, *J. H. Faull*, Univ. Toronto Herb., 646 (in Mo. Bot. Gard. Herb., 44944); Toronto, *R. P. Wodehouse*, *J. H. Faull*, *G. H. Graham*, Univ. Toronto Herb., 310, 311, 677, respectively (in Mo. Bot. Gard. Herb., 44887, 44889, 44920); Wilcox Lake, *J. H. Faull*, Univ. Toronto Herb., 377 (in Mo. Bot. Gard. Herb., 44929).
- Maine: Manchester, *F. L. Scribner*, comm. by U. S. Dept. Agr. Herb.; Orono, *F. L. Harvey*, 3 (in Mo. Bot. Gard. Herb., 43850) and in Ell. & Ev., *N. Am. Fungi*, 2018; Portage, *L. W. Riddle*, 6.
- Vermont: Brattleboro, *E. A. Burt*; Little Notch, *E. A. Burt*; Middlebury, *E. A. Burt*, three collections; North Ferrisburg, *E. A. Burt*; Ripton, *E. A. Burt*, three collections; Walden, *L. S. Orton*, 4 (in Mo. Bot. Gard. Herb., 44081).
- Massachusetts: Cambridge (in Mo. Bot. Gard. Herb., 5094).
- Connecticut: *C. C. Hanmer*, 2326, 2061 (in Mo. Bot. Gard. Herb., 43847/8).
- New York: *Sartwell* (in Mo. Bot. Gard. Herb., 5151, 5156); Alcove, *C. L. Shear*, 1120, 1122, and in Shear, *N. Y. Fungi*, 311; East Galway, *E. A. Burt*; Ithaca, *G. F. Atkinson*, 2093, 2141, *C. J. Humphrey*, 307, *H. S. Jackson & C. Lewis*,

19396; Long Lake, *A. H. W. Povah* (in Mo. Bot. Gard. Herb., 9227); North Elba, *C. H. Kauffman*, 8 (in Mo. Bot. Gard. Herb., 16701); Rome, *H. von Schrenk* (in Mo. Bot. Gard. Herb., 55022, 55024/5).

Pennsylvania: Bethlehem, *Schweinitz* (in Herb. Schweinitz); Trexlertown, *W. Herbst*, 16, 28, and comm. by Lloyd Herb., 3603.

Delaware: Wilmington, *A. Commons*, in Ell. & Ev., N. Am. Fungi, 2601.

Ohio: Norwood, *C. G. Lloyd*, 1787, and (in Mo. Bot. Gard. Herb., 5093).

Indiana: Indianapolis, *J. B. Demaree*, comm. by G. W. Hoffer (in Mo. Bot. Gard. Herb., 54790); Lafayette, *C. R. Orton*, 5 (in Mo. Bot. Gard. Herb., 44082).

Wisconsin: Madison, *W. Trelease* (in Mo. Bot. Gard. Herb., 5043); Star Lake, *Miss A. O. Stucki*, Univ. Wis. Herb., 59.

Minnesota: Park Rapids, comm. by E. L. Jensen, 10 (in Mo. Bot. Gard. Herb., 11100).

Montana: Helena, Monarch, *J. R. Weir*, 587, 598 (in Mo. Bot. Gard. Herb., 56738, 56739).

Wyoming: Boulder, *F. S. Wolpert*, comm. by J. R. Weir, 7949 (in Mo. Bot. Gard. Herb., 56219).

Idaho: Priest River, *J. R. Weir*, 10.

British Columbia: Sidney, *J. Macoun*, 74 (in Mo. Bot. Gard. Herb., 55352); Vancouver Island, *J. Macoun*, 51 (in Mo. Bot. Gard. Herb., 5737), and comm. by J. Demaree, V88 (in Mo. Bot. Gard. Herb., 22752).

Washington: Bingen, *W. N. Suksdorf*, 766, 767; Easton, *C. J. Humphrey*, 6449; Olympia, *C. J. Humphrey*, 6292; Seattle, *S. M. Zeller*, 108 (in Mo. Bot. Gard. Herb., 44140).

Oregon: Corvallis, *C. E. Owens*, 2076 (in Mo. Bot. Gard. Herb., 44038).

Uruguay: Montevideo, *W. Mitten* Herb., 1325 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56691).

34. *S. rugosiusculum* Berk. & Curtis, *Grevillea* 1: 162. 1873; Morgan, *Cincinnati Soc. Nat. Hist. Jour.* 10: 193. 1888; Sacc. *Syll. Fung.* 6: 567. 1888; Massee, *Linn. Soc. Bot. Jour.* 27: 187. 1890. Plate 4, fig. 30.

*Stereum Micheneri* Berk. & Curtis emend. Masee, Linn. Soc. Bot. Jour. **27**: 183. 1890.—*S. Micheneri* Berk. & Curtis, Grevillea **1**: 162. 1873 (in part). See Ann. Mo. Bot. Gard. **1**: 214. 1914.—*Corticium Nyssae* Berk. & Curtis, Grevillea **1**: 166. 1873; Sacc. Syll. Fung. **6**: 609. 1888; Masee, Linn. Soc. Bot. Jour. **27**: 120. 1890.—*C. siparium* Berk. & Curtis, Grevillea **1**: 177. 1873; Sacc. Syll. Fung. **6**: 636. 1888; Masee, Linn. Soc. Bot. Jour. **27**: 139. 1890.

Illustrations: Berkeley, Ann. & Mag. Nat. Hist. I. **1**: 94. pl. 5. f. 45.

Type: in Kew Herb. and Curtis Herb.

Fructifications coriaceous-soft, rarely resupinate, usually more or less broadly reflexed, upper surface tomentose, spongy, some-

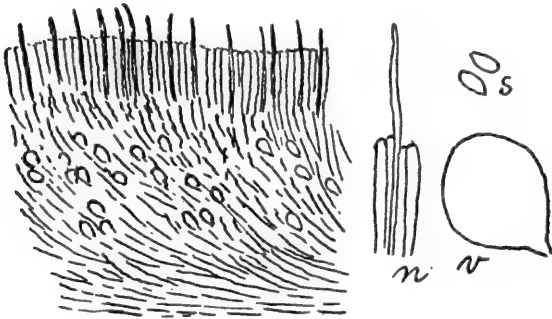


Fig. 14. *S. rugosiusculum*. Section of hymenial region  $\times 90$ ; cystidium and basidia, *n*, vesicular body, *v*, and spores, *s*,  $\times 665$ .

times with projecting hairs collapsed together into a plane or wrinkled surface, drying cartridge-buff to cinnamon-buff, the margin entire; hymenium even, drying vinaceous-buff to fawn color; in structure up to  $1-1\frac{1}{2}$  mm. thick inclusive of the tomentum, with the intermediate layer on its under side in the subhymenial region, loosely

interwoven, and containing more or less numerous, pyriform vesicular bodies  $15-30 \times 10-20 \mu$ ; cystidia slender, thin-walled, tapering hairs, not incrusted,  $4-5 \mu$  in diameter, protruding up to  $25 \mu$  beyond the basidia; spores white in spore collection, even, flattened on one side,  $4\frac{1}{2}-6 \times 2-3 \mu$ .

Resupinate specimens up to 6 cm. in diameter; reflexed portion 1-2 cm. broad, 2-6 cm. laterally along substratum.

On logs and stumps of *Salix* and other frondose species. Ontario to Alabama, in Missouri, and in British Columbia to Mexico; occurs also in Sweden, France, Italy, England, and Japan. August to April.

*Stereum rugosiusculum* is probably more frequent and more widely distributed than shown by the specimens received, for

the general aspect and microscopic structure of specimens are usually so similar to *S. purpureum* that it is distinguishable from the latter only by the presence of weak flexuous hairs in the hymenium which are not visible until sectional preparations are examined with the compound microscope. Such hymenial hairs were in 1839 figured by Berkeley, *loc. cit.*, in illustrating the hymenium of what he regarded as *Thelephora purpurea* but which now appears to have been *S. rugosiusculum*. All specimens in which these hair-like cystidia have been demonstrated have been either resupinate or with simple, reflexed portion not narrowly lobed or complicate. It has not been possible to observe a specimen throughout its whole season of growth to determine whether the hair-like cystidia are a constant character. In forming the glabrous, rugulose surface upon which the specific name is based, the specimens do not become denuded of their original tomentose covering, for sectional preparations of such specimens, mounted in liquid medium, show this hairy covering to be of the original thickness and with the tips of the hairs no longer adhering together into a plane surface but now floating free. Probably the gluing together of the hairs into a glabrous surface is a weather phenomenon.

Specimens examined:

Exsiccati: *Bartholomew*, Fungi Col., 3489, under the name *Stereum purpureum*; *Cavara*, Fungi Longobardiae, 60, under the name *Stereum purpureum*; *Ellis*, N. Am. Fungi, 323, under the name *Stereum purpureum*.

Sweden: *Stockholm*, *L. Romell*, 33.

England: *M. J. Berkeley*, under the name *Stereum vorticosum* (in *Kew Herb.*).

France: *Fautrey*, determined by *Patouillard* as *S. purpureum*, comm. by *Lloyd Herb.*, 4339, 4363.

Italy: *F. Cavara*, in *Cavara*, Fungi Longobardiae, 60.

Ontario: *London*, *J. Dearness*, in *Bartholomew*, Fungi Col., 3489.

Maine: *Morse*, comm. by *Sprague* (in *Curtis Herb.*, 5413, type of *Stereum Micheneri* as emended by *Massee*); *Harrison*, *J. Blake*, comm. by *P. L. Ricker*; *Piscataquis Co.*, *W. A. Murrill*, 1850, 2153 (in *N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb.*, 56692, 56693).

Vermont: Ripton, *E. A. Burt*.

Massachusetts: *Sprague*, 492, type (in Kew Herb. and Curtis Herb., 5412); Cambridge, *H. von Schrenk* (in Mo. Bot. Gard. Herb., 4774), and *A. B. Seymour*, *T* 19 (in Mo. Bot. Gard. Herb., 43886).

New York: Ithaca, *G. F. Atkinson*, *K*, 2818a; Lake Placid, *W. A. & E. L. Murrill*, 445 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56694); White Plains, *L. M. Underwood* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56268).

New Jersey: *J. B. Ellis*, in Ellis, N. Am. Fungi, 323.

Pennsylvania: *E. Michener*, 509, type of *Corticium Nyssae* (in Curtis Herb., 3486); Ohiopyle, *W. A. Murrill*, 1043 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56695); Trexlertown, *W. Herbst*.

Virginia: Blacksburg, *W. A. Murrill*, 351 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56710).

Alabama: *Peters*, 858, type of *Corticium siparium* (in Curtis Herb., 5239); Montgomery Co., *R. P. Burke* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56792).

Missouri: Creve Coeur Lake, *E. A. Burt* (in Mo. Bot. Gard. Herb., 13031).

Idaho: Priest River, *J. R. Weir*, 595 (in Mo. Bot. Gard. Herb., 36740).

British Columbia: *J. Macoun*, 62 (in Mo. Bot. Gard. Herb., 5740).

Washington: Bellingham, *J. R. Weir*, 604 (in Mo. Bot. Gard. Herb., 36741); Seattle, *W. A. Murrill*, 129, 139, 147, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 55743, 55732, 55728); *W. A. Murrill*, 136, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 55735), and *S. M. Zeller*, 129 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 129).

Oregon: Corvallis, *W. A. Murrill*, 892a, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 55724); Kiger Island, *S. M. Zeller*, 1788 (in Mo. Bot. Gard. Herb., 56653).

California: *R. A. Harper*, 36 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56697); Sierra Nevada Mts., *Harkness*, 1060 (in Herb. Cooke in Kew Herb., under the name *Stereum muscigenum*).

Mexico: Guernavaca, W. A. & E. L. Merrill, 410, 546, 547 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 54535, 54581, 54582).

Japan: Kushiro, A. Yasuda, 64 (in Mo. Bot. Gard. Herb., 56136).

**35. *S. Murrayi* (Berk. & Curtis) Burt, n. comb.**

Plate 4, figs. 31, 32.

*Thelephora Murrai* Berk. & Curtis, Linn. Soc. Bot. Jour. **10**: 329. 1868; *Grevillea* **1**: 150. 1873; spelling of specific name changed to *Murrayi* in Sacc. Syll. Fung. **6**: 546. 1888.—*Stereum tuberculosum* Fries, Hym. Eur. 644. 1874; Sacc. Syll. Fung. **6**: 586. 1888; Masee, Linn. Soc. Bot. Jour. **27**: 204. 1890; Romell, Bot. Not. **1895**: 70. 1895.—*S. pulverulentum* Peck, Torr. Bot. Club Bul. **27**: 20. 1900; Sacc. Syll. Fung. **16**: 187. 1902.

Illustrations: Lloyd, Myc. Writ. **5**. Myc. Notes 62: *pl.* 148. *f.* 1690. 1920.

Type: in Kew Herb. and Curtis Herb.

Fructifications corky, adnate, usually resupinate and broadly effused, sometimes reflexed, the reflexed upper surface a hard, horny crust, not shining, concentrically sulcate, fuscous-black or aniline-black, the margin entire; hymenium drying from pale olive-buff to avellaneous, tubercular, deeply cracking; in structure 300  $\mu$  thick at first, then becoming stratose and thickening to 800–2000  $\mu$ , composed of densely interwoven, rather suberect hyaline hyphae  $2\frac{1}{2}$ –4  $\mu$  in diameter and of very numerous, hyaline, pyriform vesicular organs  $15\text{--}20 \times 12\text{--}15$   $\mu$  which are distributed throughout the whole fructification; no colored conducting organs nor cystidia; spores white in spore collection, even, flattened on one side,  $4\frac{1}{2}\text{--}5 \times 2\frac{1}{2}$   $\mu$ .

Resupinate specimens 1–10 cm. in diameter, becoming confluent, reflexed part 3–10 mm. broad.

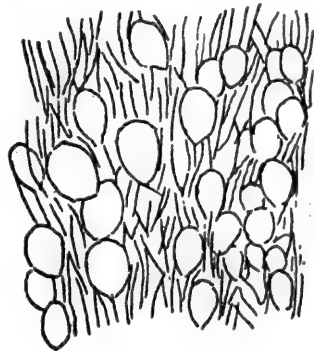


Fig. 15. *S. Murrayi*. Section of hymenial region  $\times$  488, showing vesicular bodies.

On rotting logs and limbs of frondose species such as *Acer*, *Betula*, *Fagus*, *Quercus*, and *Tilia*. Canada to West Indies and westward to British Columbia. April to October in the north and October to March in the West Indies. Common. Occurs in Scandinavia also.

The specimens upon which were based the original descriptions of *S. Murrayi* and its synonyms were resupinate; in each instance the species was included in *Stereum* or *Thelephora*, although longitudinally arranged hyphae are not present and do not constitute an intermediate layer. The distinguishing characters of the resupinate specimens are their thickness, pallid to pale avellaneous color, tubercular and deeply cracked hymenium, abundance of vesicular organs throughout the whole thickness of the fructification, and occurrence on a frondose substratum. The horny crust forming the upper side of the pileus is similar to that of some species of *Fomes* and is unique among our *Stereums*, but the reflexed stage is so rare that this character does not often afford help in recognizing the species. The geographical distribution in three widely separated areas is remarkable; it seems probable that the European stations in Norway and Sweden should be regarded as merely outlying stations of a common North American species; it is very strange that a species presumably northern should be well established in Cuba and Jamaica and absent from Florida and the Carolinas, yet specimens from all three isolated regions are identical in aspect and microscopical structure.

Specimens examined:

Exsiccati: Ell. & Ev., Fungi Col., 704, under the name *Stereum rugosum*; Ell. & Ev., N. Am. Fungi, 2903, under the name *Corticium colliculosum*; Shear, N. Y. Fungi, 51, under the name *Stereum rugosum*.

Norway: *M. N. Blytt*, type of *Stereum tuberculosum* (in Herb. Fries).

Sweden: Island of Gotland, on *Abies excelsa*, *L. Romell*, 135.

Canada: *J. Macoun*, 18, 43, 60; Billings Bridge, *J. Macoun*, 44; Lower St. Lawrence Valley, *J. Macoun*, 69, 72.

Ontario: *J. Dearness*, 1022 (in Mo. Bot. Gard. Herb., 22682); Blackwater, *J. McFarlane*, Univ. Toronto Herb., 330 (in Mo. Bot. Gard. Herb., 44865); Harraby, Lake Rosseau,

- E. T. & S. A. Harper*, 730; London, *J. Dearness*, two collections, and in Ell. & Ev., *Fungi Col.*, 704; Ottawa, *J. Macoun*, 12, and 676—the latter comm. by W. G. Farlow (in Mo. Bot. Gard. Herb., 56757); Toronto, Algonquin Park and Lorne Park, *J. H. Faull*, Univ. Toronto Herb., 500 and 333 respectively (in Mo. Bot. Gard. Herb., 44854 and 44873).
- Maine: *F. L. Harvey*, comm. by P. L. Ricker, and *F. L. Harvey*, type of *Stereum pulverulentum* (in N. Y. State Mus. Herb.) and cotype comm. by P. L. Ricker; Portage, *L. W. Riddle*, 19; Sebec Lake, *W. A. Merrill*, 2304 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56755).
- New Hampshire: Chocorua, *W. G. Farlow*; Crawford Notch, *L. O. Overholts*, 4582 (in Mo. Bot. Gard. Herb., 55640); Groton, *J. Blake*, comm. by P. L. Ricker; Hebron, *P. Wilson* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56756); Shelburne, *W. G. Farlow* (in Farlow Herb.).
- Vermont: Bristol, *E. A. Burt*; Grand View Mt., *E. A. Burt*, two collections; Middlebury, *E. A. Burt*, two collections; Ripton, *E. A. Burt*, two collections and also near Abby Pond and Lost Pleiad Lake.
- Massachusetts: *Murray*, comm. by Sprague, 546, authentic specimen of *Thelephora Murrayi* (in Curtis Herb., 5809).
- New York: Alcove, *C. L. Shear*, 1206, 1311, and in Shear, N. Y. Fungi, 51; Altamont, *E. A. Burt*; Floodwood, *E. A. Burt*; Fulton Center, *L. M. Underwood* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56274); Horicon, *C. H. Peck* (in N. Y. State Mus. Herb. and Mo. Bot. Gard. Herb., 56107); Ithaca, *C. J. Humphrey*, 549; Lake Placid, *W. A. & E. L. Merrill*, 194 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56756); North Elba, *C. H. Peck*, 1; Seventh Lake, Adirondack Mts., *B. M. Duggar & F. C. Stewart*; West Ann, *S. H. Burnham*, 4 (in Mo. Bot. Gard. Herb., 43997).
- West Virginia: Nuttallburg, *L. W. Nuttall*, in Ell. & Ev., *Fungi Col.*, 704.
- Michigan: Houghton, *C. H. Kauffman*, comm. by N. Y. State Mus. Herb. (in Mo. Bot. Gard. Herb., 55812); Sailors' Encampment, *Miss A. O. Stucki*, 5; Vermilion, *A. H. W. Povah*, 190 (in Mo. Bot. Gard. Herb., 17615).

Wisconsin: Ladysmith, *C. J. Humphrey*, 1914 (in Mo. Bot. Gard. Herb., 42916).

Idaho: Priest River, *J. R. Weir*, 362, 379 (in Mo. Bot. Gard. Herb., 16533, 17115).

British Columbia: Agassiz, *J. R. Weir*, 351 (in Mo. Bot. Gard. Herb., 8066).

Cuba: *C. Wright*, 269, type (in Kew Herb. and Curtis Herb.); Alto Cedro, *Earle & Murrill*, 491, comm. by N. Y. Bot. Gard. Herb.; Ciego de Avila, *Earle & Murrill*, 590, comm. by N. Y. Bot. Gard. Herb.; Herradura, *Earle & Murrill*, 188, comm. by N. Y. Bot. Gard. Herb.

Porto Rico: Rio Piedras, *J. A. Stevenson*, 3360 (in Mo. Bot. Gard. Herb., 7584).

Jamaica: Constant Spring Hotel grounds, *W. A. & E. L. Murrill*, 34, comm. by N. Y. Bot. Gard. Herb.; New Haven Gap, *W. A. & E. L. Murrill*, 771, comm. by N. Y. Bot. Gard. Herb.; Port Antonio, *F. S. Earle*, 575, comm. by N. Y. Bot. Gard. Herb.

**36. *S. saxitas* Burt, n. sp.**

Plate 4, fig. 33.

Type: in Mo. Bot. Gard. Herb. and N. Y. Bot. Gard. Herb.

Fructification thick, stratose, stony-hard throughout, resupinate, effused, becoming narrowly reflexed, the reflexed portion

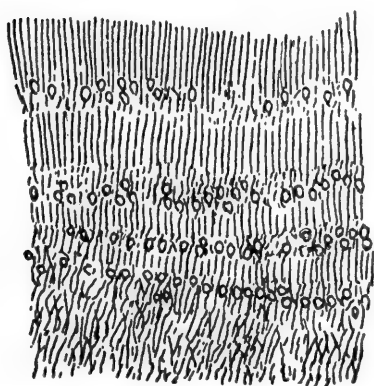


Fig. 16. *S. saxitas*. Section of hymenial region  $\times 90$ , showing vesicular bodies; spores, *s*,  $\times 665$ .

black above, irregular, stony; hymenium even or tubercular, not shining, drying cartridge-buff to whitish; in structure 1–5 mm. thick, stratose, composed of alternating pale and darker layers but with a horn-like translucent luster throughout when cut; a few vesicular organs  $20\text{--}25 \times 12\text{--}15 \mu$  present along the under portion of each stratum; no cystidia; spores hyaline, even,  $4\text{--}5 \times 3\text{--}4 \mu$ .

Resupinate portion 3–6 cm. in diameter; reflexed margin 2–4 mm. broad.

On bark of apparently a frondose species. Mexico and Jamaica. December and May.

*S. saxitas* resembles in aspect *S. Murrayi*, and relationship to this species is further shown by the presence of vesicular organs; however, it is thicker than *S. Murrayi*, stony-hard throughout, contains but few vesicular cells, and has subglobose spores. Its structure is so extremely hard that it has been possible to cut sections for microscopic details of only the hymenium and nearly adjacent regions even after prolonged soaking in water.

Specimens examined:

Mexico: Guernavaca, *W. A. & E. L. Merrill*, 419, type, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54552).  
Jamaica: John Crow Peak, *D. S. Johnson* (in N. Y. Bot. Gard. Herb., Mo. Bot. Gard. Herb., 56758, and Burt Herb.).

**37. *S. styracifluum*** Schweinitz, Naturforsch. Ges. Leipzig Schrift. 1: 105. 1822 (under *B. Sterea* of *Thelephora*); Fries, Epicr. 549. 1838; Sacc. Syll. Fung. 6: 569. 1888.

Plate 4, figs. 34, 35.

*Thelephora styraciflua* Schweinitz in Fries, Elenchus Fung. 1: 177. 1828; Schweinitz, Am. Phil. Soc. Trans. N. S. 4: 167. 1832.

Type: in Herb. Schweinitz and portions in Herb. Fries and Curtis Herb.

Fructification coriaceous, resupinate and effused, with a narrow, free marginal portion, or slightly reflexed, tomentose, drying pinkish buff to cinnamon-buff; hymenium dull, pruinose, not multizonate, drying pinkish buff, exuding a yellow milk when compressed and becoming dark-discolored, contracting in drying and splitting; in structure 700–800  $\mu$  thick, with the intermediate layer bordered on its upper side by a pale golden zone not denser than the rest of the layer, composed of very densely arranged hyphae  $2\frac{1}{2}$ –3  $\mu$  in diameter, with pale-colored conducting organs 3–3 $\frac{1}{2}$   $\mu$  in diameter which curve into the hymenium; no cystidia; spores hyaline, even, slightly curved, 5–8  $\times$  2 $\frac{1}{2}$ –3  $\mu$ .

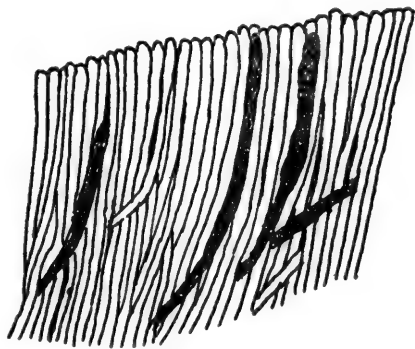


Fig. 17. *S. styracifluum*. Section of hymenial region  $\times$  488, showing conducting organs. From type.

Resupinate portion  $3 \times 2$  cm.; the free margin up to 5 mm. broad.

On under side of dead, fallen limbs of *Liquidambar* and mossy dead trunk of *Carpinus*. North Carolina and Alabama. January. Rare.

*S. styracifluum* is intermediate between *S. rameale* and *S. rugosum*; in the region where it occurs it is likely to be regarded as a resupinate form of *S. rameale*, from which it differs in darker and more irregular hymenial surface, greater thickness of fructification, margin sometimes with a black edge, and reflexed part tomentose to the margin; the pale-colored conducting organs are similar in the two species but rather more abundant in *S. styracifluum*. The general aspect is so similar to that of *S. rugosum*, very common in Europe, that the yellow milk of *S. styracifluum* was properly regarded by Schweinitz as an important distinctive character of the American species; other differences are that the intermediate layer is much broader and denser than that of *S. rugosum*, that the hymenium is only 20–30  $\mu$  broad, never zonate, and that the conducting organs are much less numerous and paler than in *S. rugosum*.

Specimens examined:

North Carolina: Salem, *Schweinitz*, type (in *Schweinitz Herb.*, *Fries Herb.*, and *Curtis Herb.*).

Alabama: Auburn, on *Carpinus*, *F. S. Earle & C. F. Baker* (in *Burt Herb.* and *Mo. Bot. Gard. Herb.*, 5061).

**38. *S. gausapatum*** Fries, *Hym. Eur.* 638. 1874; *Sacc. Syll. Fung.* 6: 560. 1888; *Massee, Linn. Soc. Bot. Jour.* 27: 180. 1890. Plate 4, fig. 36.

*Thelephora gausapata* Fries, *Elenchus Fung.* 1: 171. 1828; *Epier.* 538. 1838.—*T. spadicea* Fries, *Elenchus Fung.* 1: 176. 1828 (not *T. spadicea* Persoon, *Syn. Fung.* 568. 1801. See *Bresadola, I. R. Accad. Agiati Atti III.* 3: 106. 1897).—*Stereum spadiceum* Fries, *Epier.* 549. 1838; *Hym. Eur.* 640. 1874; *Berkeley, Outlines Brit. Fung.* 270. 1860; also of more recent English authors.—*S. spadiceum* var. *plicatum* Peck, *N. Y. State Mus. Rept.* 50: 132. 1897.—*S. cristulatum* Quelet, *Champ. Jura et Vosges* 3: 15. pl. 1. f. 15. 1875.—*S. occidentale* Lloyd, *Myc. Writ.* 5. Letter 69:12. 1919.

Type: specimen from Fries in *Kew Herb.*

Fructifications coriaceous, effuso-reflexed or somewhat dimidiate, usually cespitose-imbricated, confluent, varying from villose to hirsute, buckthorn-brown, more or less radially plicate; hymenium bleeding when fresh if cut or bruised, drying snuff-brown and more or less darker discolored; in structure 600–700  $\mu$  thick exclusive of the hairy covering, composed of densely and longitudinally arranged hyphae, with flexuous, colored conducting organs 75–120 $\times$ 5  $\mu$ , very numerous in the hymenium; no cystidia; spores hyaline, even, 5–8 $\times$ 2½–3½  $\mu$ .

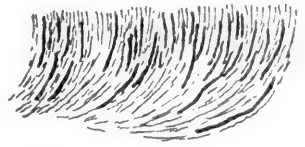


Fig. 18. *S. gausapatum*. Section of hymenial region  $\times$  68, showing distribution of conducting organs.

Singly or covering areas up to 10 cm. and more in diameter; reflexed portion about 1 cm. broad, 1–2½ cm. long or more, or with small pilei or lobes 1–1½ cm. in diameter.

On stumps of *Quercus* usually. Canada to Alabama and westward to Washington and California. August to March. Common.

*S. gausapatum* is usually recognizable at sight by its clustered fructifications tobacco-colored above and clothed with a heavy villose or strigose coat, by the rather dark hymenium which bleeds when cut and becomes somewhat darker discolored in drying, and by the occurrence on oak. Sectional preparations show very numerous, colored conducting organs in the hymenium. *S. australe* of the Gulf states bleeds and has colored conducting organs, although fewer, but its fructifications do not form dense clusters and are not radially plicate. *S. sanguinolentum* has the same geographical distribution as *S. gausapatum* and bleeds when fresh and has colored conducting organs, but has small fructifications occurring on conifers only. The hairy covering of the pileus is greedily devoured by herbarium insects, leaving the pilei bare of their normal covering if specimens are not protected against their depredations, but, except for insect depredation, this covering is a persistent character.

Fries described the effuso-reflexed stage of *S. gausapatum* under the name *T. spadicea*, confusing this stage with the more southern and specifically different *Thelephora spadicea* of Persoon, which does not occur in America. It seems preferable

to use the name *S. gausapatum* for our species, although unfortunately the other name is in general use in England, and leave the name *S. spadiceum* available for use in its original sense as continental mycologists do. It is surprising that specimens of *S. gausapatum* do not occur in Herb. Schweinitz under some name or other.

Specimens examined:

Exsiccati: Bartholomew, *Fungi Col.*, 2883, 4292; Berkeley, *Brit. Fungi*, 144; Cooke, *Fungi Brit.*, 107; Ellis, *N. Am. Fungi*, 325; Ell. & Ev., *N. Am. Fungi*, 3413, under name *Stereum hirsutum*; Ell. & Ev., *Fungi Col.*, 218; Ravenel, *Fungi Car.* 2: 32; *Fungi Am.*, 447; Romell, *Fungi Scand. Exs.*, 28, 122.

Sweden: Stockholm, *L. Romell*, 45, 46, 238, and in Romell, *Fungi Scand. Exs.*, 28, 122.

England: *M. J. Berkeley*, in Berkeley, *Brit. Fungi*, 144; Epping, *M. C. Cooke*, in Cooke, *Fungi Brit.*, 107.

Holland: Amsterdam, *C. A. J. A. Oudemans*, in Oudemans, *Fungi Neerland.*, 239 (in *Mo. Bot. Gard. Herb.*).

France: authentic specimen of *Stereum cristulatum* from Quelet (in Herb. Fries); wall of German trench, *Lieut. G. W. Martin*, comm. by P. J. Anderson, 3 (in *Mo. Bot. Gard. Herb.*, 55848); St. Sernin, Aveyron, *A. Galzin*, 1265, comm. by H. Bourdot, 16234; Corrombles, *F. Fautrey*, from Lloyd Herb., 3312.

Italy: Trentino, *G. Bresadola*.

Canada: Carleton Place, *J. Macoun*, 419.

Ontario: Lake Joseph, *T. Langton*, Univ. Toronto Herb., 590 (in *Mo. Bot. Gard. Herb.*, 44846); London, *J. Dearness*; Swansea, *J. H. Faull*, Univ. Toronto Herb., 375 (in *Mo. Bot. Gard. Herb.*, 44931); Toronto, *J. H. Faull*, *G. H. Graham*, *T. Langton*, *R. P. Wodehouse*, Univ. Toronto Herb., 372, 376, 676, 679, 591, 597, 368 (in *Mo. Bot. Gard. Herb.*, 44946, 44932, 44923, 44935, 44849, 44840, 44855, respectively).

Vermont: Lake Dunmore, *E. A. Burt*, three collections; Middlebury, *E. A. Burt*.

Massachusetts: Mt. Auburn, *E. A. Burt*; Stoneham, *C. L. Shear*, 1233; Wayland, *A. B. Seymour*, T36 (in *Mo. Bot.*

- Gard. Herb., 13939); Waverly, *G. R. Lyman*, 121; Weston, *A. B. Seymour*, T10 (in Mo. Bot. Gard. Herb., 19621).
- Connecticut: West Hartford, *C. C. Hanmer*, 2670 (in Mo. Bot. Gard. Herb., 42605).
- New York: *Sartwell* (in Mo. Bot. Gard. Herb., 5046, 5102); Cold Spring Harbor, *H. J. Banker* (in Mo. Bot. Gard. Herb., 54434); Green Lake, *P. Wilson*, 52 (in Mo. Bot. Gard. Herb., 54745); Ithaca, *G. F. Atkinson*, 223 O. S., 2140, 7986, 7986b, *H. H.*, 5088, *C. J. Humphrey*, *F. A. Wolf*, 22943; N. Greenbush, *C. H. Peck*, in *Ellis*, N. Am. Fungi, 325; Poughkeepsie, *W. R. Gerard*, 271 (in N. Y. Bot. Gard. Herb.); Shakers, *S. H. Burnham*, 16 (in Mo. Bot. Gard. Herb., 44010); St. Regis Falls, *L. A. Zimm*, 94 (in Mo. Bot. Gard. Herb., 21941); Williamsbridge, *P. Wilson*, 2 (in Mo. Bot. Gard. Herb., 54746); White Plains, *L. M. Underwood* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56700).
- New Jersey: Newfield, *J. B. Ellis*, in *Ell. & Ev.*, Fungi Col., 218.
- Pennsylvania: Kittanning, *D. R. Sumstine*, 5, 6, 8; Spruce Creek, *J. H. Faull*, Univ. Toronto Herb., 371, 672 (in Mo. Bot. Gard. Herb., 44925, 44938); Trexlertown, *C. G. Lloyd*, 0054.
- Delaware: Newark, *H. S. Jackson*.
- Maryland: Takoma Park, *C. L. Shear*, 1018, 1201, 1270, 1273.
- Virginia: Clarendon, *W. H. Long*, 12617 (in Mo. Bot. Gard. Herb., 55103); Park Lane, *W. H. Long*, 12860 (in Mo. Bot. Gard. Herb., 55109).
- North Carolina: Biltmore, *C. Harrison*, comm. by *P. L. Ricker*, *E. Bartholomew*, 5663 (in Mo. Bot. Gard. Herb., 44262); Blowing Rock, *G. F. Atkinson*, 4318, 4328; Chapel Hill, *W. C. Coker*, 334, 3821 (in Mo. Bot. Gard. Herb., 56670, 56671).
- South Carolina: Aiken, *H. W. Ravenel*, in *Ravenel*, Fungi Am., 447; Black Oak, *H. W. Ravenel*, in *Ravenel*, Fungi Car. 2: 32.
- Georgia: Tallulah Falls, *A. B. Seymour*, comm. by *W. G. Farlow*, *C. C.* (in Mo. Bot. Gard. Herb., 44604).
- Alabama: Auburn, *F. S. Earle* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56287, 56703), and *C. F. Baker*,

50 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56702); Montgomery Co., *R. P. Burke*, 24, 38 (in Mo. Bot. Gard. Herb., 17651, 4925).

Louisiana: St. Martinville, *A. B. Langlois*, 165.

Michigan: *Beal*, 57, comm. by N. Y. State Mus. Herb. (in Mo. Bot. Gard. Herb., 55810); Ann Arbor, *C. H. Kauffman*, 37 (in Mo. Bot. Gard. Herb., 18995); Glen Lake, *C. G. Lloyd*, 02551.

Ohio: Cincinnati, *C. G. Lloyd*, 02820; College Hill, *W. Holden*, comm. by Lloyd Herb.

Indiana: Millers, *E. T. & S. A. Harper*, 678.

Illinois: River Forest, *E. T. & S. A. Harper*, 708; Riverside, *E. T. & S. A. Harper*, 686.

West Virginia: Nuttallburg, *L. W. Nuttall*, in *Ell. & Ev.*, N. Am. Fungi, 3413.

Kentucky: *S. A. Price* (in Mo. Bot. Gard. Herb., 5136).

Wisconsin: Madison, *E. T. & S. A. Harper*, 942, *Miss A. D. Stucki*, 32, and *W. Trelease*, 84 (in Mo. Bot. Gard. Herb., 5101).

Iowa: Webster Co., *O. M. Oleson*, 2, 3, 5.

Missouri: Columbia, *B. M. Duggar*, 358, 392, 573; St. Louis, *C. R. Ball & H. H. Hume*, and *E. A. Burt* (in Mo. Bot. Gard. Herb., 5023, 21989).

Arkansas: Fayetteville, *E. Bartholomew*, in *Bartholomew*, Fungi Col., 2883; Womble, *W. H. Long*, 19849 in part (in Mo. Bot. Gard. Herb., 20271).

Texas: Joaquin, *E. Bartholomew*, in *Bartholomew*, Fungi Col., 4292.

Nebraska: Lincoln, *C. L. Shear*, 1017; Roco, *C. L. Shear*, 1012.

Kansas: Bourbon Co., *A. G. Garrett*, 86, 129.

British Columbia: Kootenai Mts., near Salmo, *J. R. Weir*, 502 (in Mo. Bot. Gard. Herb., 21630).

Washington: Seattle, *S. M. Zeller*, 109 (in Mo. Bot. Gard. Herb., 44142); *T. C. Frye*, 2007 (in N. Y. Bot. Gard. Herb.); Whidley Is., *N. L. Gardner*, Univ. Calif. Herb., 1033 (in Mo. Bot. Gard. Herb., 44151).

Oregon: Corvallis, *C. E. Owens*, 2085 (in Mo. Bot. Gard. Herb., 44247), *W. A. Murrill*, 903, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 55720); Portland, *J. R. Weir*, 396 (in Mo. Bot. Gard. Herb., 14094).

California: *I. M. Johnston*, comm. by C. G. Lloyd, part of type of *Stereum occidentale* (in Mo. Bot. Gard. Herb., 56762); Alameda Co., *L. S. Smith*, Univ. Calif. Herb., 403 (in Mo. Bot. Gard. Herb., 44150); Preston's Ravine, Palo Alto, W. A. Murrill & *L. S. Abrams*, 1190, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 55711); Redwood Park, *W. H. Long*, 12604 (in Mo. Bot. Gard. Herb., 55100); Santa Barbara, *O. M. Oleson*, 7, 15.

Arizona: C. G. Pringle, comm. by W. G. Farlow.

Mexico: San Luis Potosi, comm. by U. S. Dept. Agr. Herb.

**39. *S. australe*** Lloyd, Myc. Writ. 4. Letter 48: 10. 1913; and *ibid.* Letter 60: 15. 1916. Plate 4, fig. 37.

An *Thelephora mytilina* Fries, Elenchus Fung. 1: 175. 1828?

Type: in Lloyd Herb. and Mo. Bot. Gard. Herb.

Fructification coriaceous, attached by the resupinate side and umbo, broadly reflexed, sometimes laterally confluent, densely tomentose, becoming concentrically furrowed and very rarely glabrous and showing the shining chestnut surface of the pileus in one or more of the furrows, the margin entire, sometimes becoming blackish; hymenium even, glabrous, drab-gray to avel-laneous, becoming red-discolored where cut or bruised, and sometimes bleeding; in structure 900  $\mu$  thick, composed of densely, longitudinally arranged hyphae, among which are a few colored conducting organs  $3\frac{1}{2}$ – $4\frac{1}{2}$   $\mu$  in diameter which curve into the hymenium between the basidia; no cystidia nor gloeocystidia present; spores hyaline, even, flattened on one side,  $4$ – $4\frac{1}{2}$   $\times$   $2\frac{1}{2}$ – $3$   $\mu$ , few found.

Fructifications with resupinate portion 1–3 cm. broad, reflexed portion 1–4 cm. broad, 1–5 cm. long and sometimes more by lateral confluence.

On hardwood logs. Florida and Mississippi to Brazil. August to December in the north and in July in Brazil. Apparently rare.

*Stereum australe* combines the characters of *S. fasciatum* and *S. gausapatum*. Its general aspect resembles that of specimens of *S. fasciatum* in a middle period of development when they are effuso-reflexed and have the umbo developed, but the specimens of *S. australe* have a broader resupinate portion than those of *S.*

*fasciatum* and are not wedge-shaped and attached merely by the umbo in any specimens which I have seen; the bleeding or red-discoloration of the hymenium when cut or bruised and the presence of colored conducting organs are additional characters which separate *S. australe* from *S. fasciatum*. *S. australe* may be distinguished from *S. gausapatum* by not having its reflexed portion crisped nor consisting of small pilei which stand out near together and in imbricate arrangement from a common resupinate portion.

In case of the collection from Mississippi, it was noted that the substratum was badly sap-rotted.

If original specimens of *Thelephora mytilina*, collected by Lund in Brazil, are still in existence, I believe that they will be found cospecific with *S. australe*. The geographical range of *S. australe* and the description of *T. mytilina* favor this belief. Fries's description was probably based on dried specimens, and it does not mention bleeding of the hymenium nor such a microscopical character as colored conducting organs, for such a microscopic detail was not noted in those days, but the blackening of the edge of the pileus which was observed by Fries is an indication of a bleeding hymenium and colored conducting organs.

Specimens examined:

Florida: type comm. by C. G. Lloyd (in Mo. Bot. Gard. Herb., 56608); Kissimme, C. J. Humphrey, 3532 (in Mo. Bot. Gard. Herb., 3370).

Mississippi: Laurel, C. J. Humphrey, 5434.

Mexico: Jalapa, W. A. & E. L. Murrill, 189, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54446).

Canal Zone: Gatun, M. A. H. (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56707).

Grenada: W. E. Broadway (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56625, 56626).

Venezuela: Caracas, Mr. & Mrs. J. N. Rose, 22038 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56657).

Brazil: Rio de Janeiro, J. N. Rose & P. G. Russell, 21480 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56627).

40. *S. rugosum* Persoon, Roemer Neues Mag. Bot. 1: 110. 1794; Fries, Epicr. 552. 1838; Myc. Eur. 643. 1874; Berk-

eley, Brit. Fungi, 271. 1860; Sacc. Syll. Fung. 6: 572. 1888; Massee, Linn. Soc. Bot. Jour. 27: 191. 1890.

Plate 4, figs. 38, 39.

*Thelephora rugosa* Persoon, Syn. Fung. 569. 1801; Myc. Eur. 1: 127. 1822; Albertini & Schweinitz, Consp. Fung. 274. 1805; Fries, Syst. Myc. 1: 439. 1821; Elenchus Fung. 1: 177. 1828.

Illustrations: Istvanffi, Jahrbuch. f. wiss. Bot. 29: pl. 4. f. 11; pl. 5. f. 19.

Fructifications coriaceous-corky, usually resupinate and effused, with a narrow, free, marginal portion, or sometimes reflexed, silky at first and pinkish buff, at length concentrically furrowed, radially pitted and weathering gray, the margin thick, entire; hymenium dull, pruinose, drying pinkish buff to drab-gray, when fresh bleeding where wounded; in structure 500–1800  $\mu$  thick, with the intermediate layer bordered on the upper side by a dense golden zone and on the lower side by a two- to many-zoned hymenial layer 120–1200  $\mu$  thick, hyphae of intermediate layer  $2\frac{1}{2}$ –3  $\mu$  in diameter; dark-colored conducting organs very numerous, 3–6  $\mu$  in diameter; no cystidia; spores hyaline, even, flattened on one side,  $7-10 \times 3-4 \mu$ .

Resupinate on areas 2–6 cm. in diameter; free or reflexed margin 2–12 mm. broad.

On stumps of *Alnus*, *Corylus*, *Quercus*, *Betula*, and other frondose species. Newfoundland, Ontario, New York, and mountains of North Carolina. July to October. Rare in North America, common in Europe.

Although usually resupinate and likely to be regarded as a *Corticium* by collectors, nevertheless sectional preparations show the highly developed characteristic structure of a *Stereum*, with intermediate layer of longitudinally arranged hyphae, golden crust, etc. The bleeding of the hymenium and the abundant colored conducting organs locate the species among the *Stereums* in the group with *S. gausapatum*, *S. australe*, and *S.*



Fig. 19. *S. rugosum*. Section  $\times 19$ ; intermediate layer, *i*; dense golden zone, *z*; the scattered darker lines in hymenial zones show distribution of conducting organs.

*sanguinolentum*, from each of which *S. rugosum* is sharply distinct by its two- to several-zoned hymenium—a character by which the species is also separable in dried herbarium condition from *S. styracifluum* when no observations have been recorded as to the color of the milk of specimens in fresh condition.

Specimens examined:

Exsiccati: Berkeley, Brit. Fungi, 145; Krieger, Fungi Sax., 1853, 1853b; Rabenhorst, Herb. Myc., 503; Romell, Fungi Scand. Exs., 30; de Thümen, Myc. Univ., 1009.—All specimens distributed as *S. rugosum* in American exsiccati were misdetermined.

England: *M. J. Berkeley*, in Berkeley, Brit. Fungi, 145; Epping Forest, *E. A. Burt*; Kew Garden, *G. Masee*.

Sweden: *L. Romell*, 40–42; Femsjö, *E. A. Burt*; Stockholm, *L. Romell*, in Romell, Fungi Scand. Exs., 30; Upsala, *E. P. Fries* (in Curtis Herb.).

Finland: Mustiala, *P. A. Karsten*, in de Thümen, Myc. Univ., 1007.

Germany: Dresden, in Rabenhorst, Herb. Myc., 503; Saxony, Uttewalder Grunde, *W. Krieger*, in Krieger, Fungi Sax., 1853, 1853b.

Hungary: Tatra Magna, Lócse, *V. Greschik*, comm. by *G. Bresadola*.

Italy: Trentino, *G. Bresadola*, two collections.

France: Allier, St. Priest, *H. Bourdot*, 15023.

Newfoundland: Bay of Islands, *A. C. Waghorne*, 160 (in Mo. Bot. Gard. Herb., 5096); Trinity Bay, *A. C. Waghorne*, 1 (in Mo. Bot. Gard. Herb., 5098).

Quebec: Gaspé, *J. Macoun*, and 254 (in N. Y. State Mus. Herb. and Mo. Bot. Gard. Herb., 56094).

Ontario: Ottawa, *J. Macoun*, 38.

New York: Fall Creek, *G. F. Atkinson*, 949.

North Carolina: Blowing Rock, *G. F. Atkinson*, 4189.

**41. *S. sanguinolentum*** Albertini & Schweinitz, Consp. Fung 274. 1805 (under *B. Sterea* of *Thelephora*); Schweinitz, Naturforsch. Ges. Leipzig Schrift. 1: 106. 1822; Fries, Epicr. 549. 1838; Hym. Eur. 640. 1874; Berkeley, Brit. Fungi, 271. 1860; Sacc. Syll. Fung. 6: 564. 1888; Masee, Linn. Soc. Bot. Jour. 27: 189. 1890.

Plate 5, fig. 40.

*Thelephora sanguinolenta* Alb. & Schw. in Fries, Syst. Myc. 1: 440. 1821; Elenchus Fung. 1: 178. 1828.—*Stereum balsameum* Peck, N. Y. State Mus. Rept. 27: 99. 1875; *ibid.* 30: 75. 1879; Sacc. Syll. Fung. 6: 584. 1888; Masee, Linn. Soc. Bot. Jour. 27: 196. 1890.—*S. balsameum* form *reflexum* Peck, N. Y. State Mus. Rept. 47: 152. 1894.—*S. rigens* Karsten, Finska Vet.-Soc. Bidrag Natur och Folk 37: 243. 1882; *ibid.* 48: 396. 1889; Sacc. Syll. Fung. 11: 121. 1895.

Illustrations: Gillet, Hymenomycetes; Greville, Crypt. Fl. 4: pl. 225; Istvanffi, Jahrbüch. f. wiss. Bot. 29: pl. 4. f. 7-10; Klotzsch in Dietrich, Fl. Reg. Borussici, pl. 381; Nees, Syst. 2nd ed. pl. 28. f. 1-3; Patouillard, Tab. Anal. f. 28.

Fructifications coriaceous, thin, effused, and reflexed, with upper surface villose to silky and the hairs appressed and somewhat radiately arranged, drying pinkish buff to pale olive-buff, the margin thin; hymenium glabrous, bleeding where wounded, contracting in drying and cracking to the substratum in the resupinate portion, drying avellaneous to wood-brown; in structure 400-600  $\mu$  thick, with intermediate layer bordered on the upper side by a narrow, dense golden zone, and composed of densely arranged hyaline hyphae 3  $\mu$  in diameter and of colored conducting organs 3-4  $\mu$  in diameter which curve into the hymenium and are usually numerous there; no cystidia; spores white in spore collection, even, slightly curved,  $6-7 \times 2\frac{1}{2}$   $\mu$ .

Resupinate portions 1-5 cm. in diameter, reflexed margins 2-10 mm. broad.

On stumps and logs of *Pinus*, *Abies*, and *Tsuga*. Ontario to Pennsylvania and westward to British Columbia and California. July to March. Frequent.

*S. sanguinolentum* is commonly resupinate or barely reflexed, so that it is best recognized by its occurrence on conifers and bleeding of the hymenium where wounded, or becoming merely red-discolored along the edges of the wound if the wound is

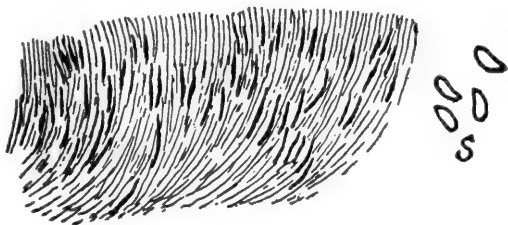


Fig. 20. *S. sanguinolentum*. Section of hymenial region  $\times 68$ , showing distribution of conducting organs; spores, s,  $\times 488$ .

made during dry weather. The somewhat drab color the hymenium assumes in drying and its deep cracks are highly characteristic of dried specimens. Colored conducting organs are abundant in the hymenium and subhymenium and should be demonstrated if other characters leave the determination doubtful.

Specimens examined:

Exsiccati: Krieger, *Fungi Sax.*, 160; Romell, *Fungi Scand. Exs.*, 29; de Thümen, *Myc. Univ.*, 2010, and 2111, under the name *Stereum rigens*.

Sweden: *L. Romell*, 43, 44; Lapland, *L. Romell*, 401 bis; Stockholm, *L. Romell*, in *Romell, Fungi Scand. Exs.*, 29; Upsala, *E. A. Burt*.

Finland: Mustiala, *P. A. Karsten*, in de Thümen, *Myc. Univ.* 2010, 2111.

France: Allier, *H. Bourdot*, 5586, 7591.

Italy: *G. Bresadola*; Florence, *G. Arcangeli* (in *Mo. Bot. Gard. Herb.*, 44565).

Newfoundland: Bay of Islands, *A. C. Waghorne*, 337, 350, the latter determined by Peck as *S. balsameum* (in *Mo. Bot. Gard. Herb.*, 5099, 5056).

Canada: comm. by *J. B. Ellis*, 5070 (in *Kew Herb.*, under the name *Stereum triste* as determined by Cooke).

Quebec: Montreal, *R. J. Blair*, comm. by *L. O. Overholts*, 3787, 4107 (in *Mo. Bot. Gard. Herb.*, 55097, 55638).

Ontario: Bond Lake, *J. H. Faull*, *Univ. Toronto Herb.*, 320 (in *Mo. Bot. Gard. Herb.*, 44875); Casselman, *J. Macoun*, 359; Lake Nipigon, *J. Macoun*, 103; Ottawa, *J. Macoun*, 11; Toronto, *R. P. Wodehouse*, *Univ. Toronto Herb.*, 369 (in *Mo. Bot. Gard. Herb.*, 44850); York Mills, *J. H. Faull*, *Univ. Toronto Herb.*, 318 (in *Mo. Bot. Gard. Herb.*, 44877).

Maine: Piscataquis Co., *W. A. Murrill*, 2029 (in *N. Y. Bot. Gard. Herb.* and *Mo. Bot. Gard. Herb.*, 56705); Portage, *L. W. Riddle*, 18.

New Hampshire: Chocorua, *W. G. Farlow*, 4; Tuckerman's Ravine, Mt. Washington, *L. O. Overholts*, 4949 (in *Mo. Bot. Gard. Herb.*, 56343).

Vermont: Little Notch, Middlebury, and Ripton, *E. A. Burt*.

Massachusetts: *R. J. Blair*, 327, comm. by *L. O. Overholts*,

- 4118 (in Mo. Bot. Gard. Herb., 55641), and *D. W. Weis*, comm. by *C. G. Lloyd*, 129 (in Mo. Bot. Gard. Herb., 56708).
- New York: Adirondack Mts., *C. H. Peck*, type of *Stereum balsameum* (in N. Y. State Mus. Herb.); Alcove, *C. L. Shear*, 1136; Cayuga Lake Basin, *G. F. Atkinson*, f, 3028, 8271, and *H. Hasselbring*, 3408; Glasco, *P. Wilson*, 38 (in Mo. Bot. Gard. Herb., 54743); Ithaca, *C. J. Humphrey*, 305.
- Pennsylvania: Shingleton Gap, *A. S. Rhoads*, 9 (in Mo. Bot. Gard. Herb., 44086).
- North Carolina: Salem, *Schweinitz* (in Herb. Schweinitz).
- Michigan: Gogebic Co., *E. A. Bessey*, 224 (in Mo. Bot. Gard. Herb., 56563).
- Montana: Anaconda, *J. R. Weir*, 11973 (in Mo. Bot. Gard. Herb., 56727); Elkhorn, *J. R. Weir*, 9749 (in Mo. Bot. Gard. Herb., 56224); Evaro, *J. R. Weir*, 413 (in Mo. Bot. Gard. Herb., 14773).
- Colorado: Ouray, *C. L. Shear*, 1186.
- New Mexico: Sandia Mts., *W. H. Long*, 21576, 21597 (in Mo. Bot. Gard. Herb., 55154, 55116); Tyom Experiment Station, *W. H. Long*, 21554 (in Mo. Bot. Gard. Herb., 55115).
- Idaho: Priest River, *J. R. Weir*, 47, 347 (the latter in Mo. Bot. Gard. Herb., 9989); Sandpoint, *E. E. Hubert*, comm. by *J. R. Weir*, 11612 (in Mo. Bot. Gard. Herb., 56726).
- British Columbia: Agassiz, *J. R. Weir*, 387 (in Mo. Bot. Gard. Herb., 20887); Hastings, *J. Macoun*, 27; Kootenai Mts., near Salmo, *J. R. Weir*, 507 (in Mo. Bot. Gard. Herb., 22700); Sidney, *J. Macoun*, 411 (in Mo. Bot. Gard. Herb., 55311).
- Washington: Bingen, *W. N. Suksdorf*, 871; Falcon Valley, *W. N. Suksdorf*, 723; Hoquiom, *C. J. Humphrey*, 6383; Olympia, *C. J. Humphrey*, 6306; Renton, *C. J. Humphrey*, 6439.
- California: Muir Woods, *W. A. Murrill*, 1153 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 55705); Olema, *M. A. H.* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56590); Sutro Woods, *R. A. Harper* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56704).
- Arizona: Coronada Nat. Forest, Santa Catalina Mts., *G. G.*

*Hedcock & W. H. Long*, comm. by C. G. Humphrey, 2561 (in Mo. Bot. Gard. Herb., 9438).

**42. *S. sulphuratum*** Berkeley & Ravenel, Linn. Soc. Bot. Jour. 10: 331. 1868; Grevillea 1: 163. 1873; Sacc. Syll. Fung. 6: 566. 1888; Masee, Linn. Soc. Bot. Jour. 27: 192. 1890.

Plate 5, fig. 41.

*Stereum ochroleucum* Bresadola, Ann. Myc. 1: 91. 1903. Not *Stereum ochroleucum* Fries, Hym. Eur. 639. 1874, nor *Corticium ochroleucum* Fries, Epicr. 557. 1838.

Type: in Kew Herb. and Curtis Herb.

Fructifications coriaceous, stiff, effuso-reflexed, finally umbonate along the line of attachment to the substratum, and lobed,

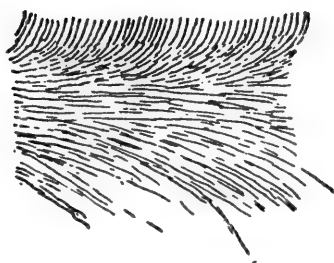


Fig. 21. *S. sulphuratum*. Section of type  $\times 68$ . The outer border of intermediate layer not a colored, crust-like zone.

upper surface tomentose-hirsute, concentrically furrowed, "sulphur colored" when fresh, becoming cartridge-buff to gray in the herbarium, the surface not hardened and crust-like under the hairy covering; hymenium even, glabrous, becoming pinkish buff to dirty tilleul-buff in the herbarium; in structure 200–400  $\mu$  thick under the hairy covering, with the intermediate layer not differentiated on its upper side into a dense golden zone but hyaline throughout and with the longitudinally arranged

hyphae  $3\text{--}3\frac{1}{2}$   $\mu$  in diameter, curving outward on the upper side to form the hirsute covering and curving downward on the under side to form the hymenium; no colored conducting organs, gloecystidia, nor cystidia; spores hyaline, even,  $6\text{--}8 \times 2\text{--}3$   $\mu$ .

Fructifications with resupinate portion  $\frac{1}{2}$ –2 cm. broad, 10 cm. and more long on under side of limbs; reflexed lobes  $\frac{1}{2}$ – $1\frac{1}{2}$  cm. broad,  $\frac{1}{2}$ – $2\frac{1}{2}$  cm. long.

On dead limbs of *Betula* and other frondose species. Georgia to Mexico, West Indies, Venezuela, and Brazil. September to January. Not common.

In growing condition, the sulphur color attributed to specimens of *S. sulphuratum* and the heavy, hirsute covering of the pilei, taken in connection with geographic range wholly south

of that of *S. hirsutum*, should render specimens of the former species easily distinguishable. All gatherings of *S. sulphuratum* which I have seen had already faded to the gray color of old, weathered *S. hirsutum* and in this condition are best distinguished by not having underneath the hairy covering a thin hardened crust as the upper surface of the intermediate layer, nor a dense, somewhat golden zone on the upper border of the intermediate layer when sectional preparations are examined with the microscope.

*S. sulphuratum* occurs also in Westphalia, Germany, apparently an isolated station, and has been confused there with *Stereum ochroleucum* Fries, a species of thicker and softer structure having hyphae interwoven instead of densely and longitudinally arranged—for which reason Fries was doubtful about its being a true *Stereum* and published the species originally as a *Corticium*. Collections from Sweden and France communicated to me as cospecific with the Westphalian gatherings have the upper surface of the intermediate layers with a crust-like golden zone and are referable to *S. hirsutum* instead.

Specimens examined:

Exsiccati: Brinkmann, Westfälische Pilze, 49, under name of *Stereum ochroleucum*; Rick, Fungi Austro-Am., 260, under name of *Stereum ochroleucum*.

Germany: Westphalia, Lengerich, *W. Brinkmann*, comm. by G. Bresadola, and in Brinkmann, Westfälische Pilze, 49.

Georgia: Catoosa Springs, *H. W. Ravenel* (in Kew Herb. and in Curtis Herb., 1731).

Florida: *C. G. Lloyd*, 2131.

Alabama: Auburn, *Ala. Biol. Surv.*, comm. by F. S. Earle; Montgomery, *R. P. Burke*, 4 (in Mo. Bot. Gard. Herb., 22017).

Mexico: Jalapa, *W. A. & E. L. Murrill*, 316, 343, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54438, 55477).

Cuba: *C. Wright*, 292, type (in Kew Herb.).

Jamaica: *Farr* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56667); Cinchona, *W. A. & E. L. Murrill*, 480, 546, comm. by N. Y. Bot. Gard. Herb.; Morce's Gap, *W. A. & E. L. Murrill*, 723, comm. by N. Y. Bot. Gard.

Herb.; Monkey Hill, W. A. & E. L. Murrill, 784, comm. by N. Y. Bot. Gard. Herb.; Sir John Peak, L. M. Underwood, 3182 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56668).

Venezuela: Fendler, 169 (in Curtis Herb.).

Brazil: Sao Leopoldo, Rick, in Rick, Fungi Austro-Am., 260.

43. *S. hirsutum* Willdenow ex Fries, Epicr. 549. 1838; Hym. Eur. 639. 1874; Persoon, Roemer Neues Mag. Bot. 1: 110. 1794; Obs. Myc. 2: 90. 1799; Berkeley, Outlines Brit. Fung. 270. pl. 17. f. 7. 1860; Sacc. Syll. Fung. 6: 563. 1888.

Plate 5, fig. 42.

*Thelephora hirsuta* Willdenow, Fl. Berol. Prod. 397. 1787; Fries, Syst. Myc. 1: 439. 1821; Persoon, Syn. Fung. 570. 1801; Myc. Eur. 1: 116. 1822.—*Auricularia reflexa* Bulliard, Herb. de la France 1: 281. pl. 274. 1785.—*Thelephora ochracea* Schweinitz, Naturforsch. Ges. Leipzig Schrift. 1: 106. 1822, but not of Fries.—*T. subzonata* Fries, Elenchus Fung. 1: 181. 1828; Schweinitz, Am. Phil. Soc. Trans. N. S. 4: 167. 1832.—*Corticium subzonatum* Fries, Epicr. 557. 1838; Sacc. Syll. Fung. 6: 608. 1888.—*Stereum varicolor* Lloyd, Myc. Writ. 4. Letter 53: 10. 1914.

Illustrations: Berkeley, Outl. Brit. Fung. pl. 17. f. 7; Bolton, Hist. Fung. pl. 82; Bulliard, Herb. de la France, pl. 274; Hussey, Ill. Brit. Myc. 1: pl. 58; Sowerby, Col. Figs. Brit. Fung. pl. 27; Stevenson, Brit. Fungi 2: 267. text f. 86. See Sacc. Syll. Fung. 20: 890, for reference to other illustrations.

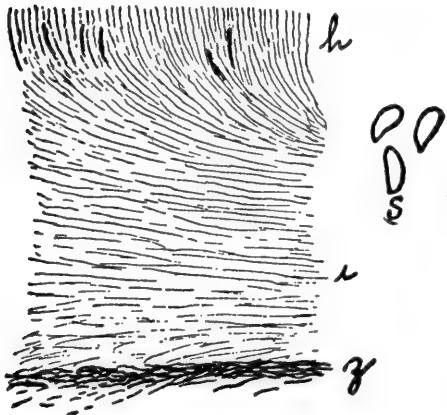


Fig. 22. *S. hirsutum*. Section  $\times 68$ ; intermediate layer, *i*; golden, crust-like zone, *z*; hymenium containing very few conducting organs, *h*; spores, *s*,  $\times 488$ .

Fructifications coriaceous, stiff, effuso-reflexed, rarely wholly resupinate, strigose-hirsute, somewhat concentrically furrowed, not complicate, cream-buff at first, becoming grayish when old and weathered, with a thin, hardened, crust-like surface bearing the hairy covering, the margin entire;

hymenium even, warm buff at first, sometimes becoming pale smoke-gray, unchanged when cut or bruised; in structure 500–700  $\mu$  thick under the hairy covering, with the intermediate layer bordered next to the hairy covering by a very dense, narrow, golden zone, the rest of the intermediate layer composed of densely and longitudinally arranged hyaline hyphae 3–4  $\mu$  in diameter, some of which in the subhymenium are thick-walled, up to 5–6  $\mu$  in diameter, and very rarely have golden-brown contents as seen between the basidia; no colored conducting organs, cystidia, nor gloeocystidia; spores white in spore collection, even, flattened on one side,  $5-7\frac{1}{2} \times 2-2\frac{3}{4}$   $\mu$ .

Reflexed portion varying from barely reflexed up to 2 cm. broad, 1–2 cm. long; fructifications merely gregarious or confluent, and imbricated.

On logs and stumps of birch, beech, and other frondose species. Newfoundland to South Carolina and westward to British Columbia and California, and in Mexico. July to November in the east and to February in the Pacific states. Common.

*Stereum hirsutum* is characterized by its strigose-hirsute, buff-colored pileus, weathering more or less gray, and by its warm buff hymenium, sometimes smoke-gray, which does not exude a red juice when wounded; as in *S. rameale*, *S. versicolor*, *S. fasciatum*, *S. lobatum*, *S. australe*, and *S. gausapatum*, the upper surface of the intermediate layer is differentiated into a thin, golden, somewhat horny crust from which the hairy covering springs. This golden zone shows well under the microscope, and its presence is a decisive character for separating *S. hirsutum* from the southern *S. sulphuratum*, a species of somewhat similar aspect.

Specimens examined:

Exsiccati: Berkeley, Brit. Fungi, 146; Cavares, Fungi Longobardiae, 61; Cooke, Fungi Brit., 108; Ellis, N. Am. Fungi, 1204; Krieger, Fungi Sax., 118; Rabenhorst, Herb. Myc., 211; Romell, Fungi Scand. Exs., 26.

Sweden: Femsjö, L. Romell, two collections, and E. A. Burt; Mauritzberg, W. A. & E. L. Murrill, 4078 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56671); Stockholm, L. Romell, 30, 401, and in Romell, Fungi Scand. Exs., 26.

- England: *M. J. Berkeley*, in Berkeley, Brit. Fungi, 146; Epping, *M. C. Cooke*, in Cooke, Fungi Brit., 108; Kew Gardens, *G. Massee*; Selby, *E. A. Burt*.
- France: *Fautrey*, comm. by Lloyd Herb., 3326; Aveyron, *A. Galzin*, 8459, comm. by H. Bourdot, 7813; St. Priest, Allier, *H. Bourdot*, 19770.
- Germany: Nossen, Saxony, *W. Krieger*, in Krieger, Fungi Sax., 118.
- Italy: *A. Carestia*, 784, 1215, comm. by G. Bresadola; Pavia, *F. Cavara*, in Cavara, Fungi Longobardiae, 61.
- Newfoundland: *A. C. Waghorne*, 118 (in Mo. Bot. Gard. Herb., 5082).
- Canada: *J. Macoun*, 69.
- Ontario: Ottawa, *J. Macoun*, 16, 466a; Port Credit, *J. H. Faull*, Univ. Toronto Herb., 353 (in Mo. Bot. Gard. Herb., 44858); Toronto, *G. H. Graham*, Univ. Toronto Herb., 678 (in Mo. Bot. Gard. Herb., 44919).
- Maine: Milo, *W. A. Merrill*, 2024 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56682).
- New Hampshire: North Conway, *L. O. Overholts*, 5009 (in Mo. Bot. Gard. Herb., 56346).
- Vermont: Middlebury, *E. A. Burt*; Ripton, *E. A. Burt*; Smugglers Notch, *E. A. Burt*, two gatherings.
- Massachusetts: Boston, *L. C. Monahan* (in Mo. Bot. Gard. Herb., 15309); Cambridge, *E. A. Burt*; Mt. Auburn, *E. A. Burt*; Nahant, *A. B. Seymour*, T 31 (in Mo. Bot. Gard. Herb., 12954); Waverly, *A. B. Seymour*, T 25, T 26 (in Mo. Bot. Gard. Herb., 16364, 18372); Waltham, *A. B. Seymour*, T 16 (in Mo. Bot. Gard. Herb., 17912).
- Connecticut: Broad Brook, *C. C. Hanmer*, 2682 (in Mo. Bot. Gard. Herb., 42606); Mansfield, *P. W. Graff*, 13 (in Mo. Bot. Gard. Herb., 44817); Storrs, *P. W. Graff*, 29 (in Mo. Bot. Gard. Herb., 44804).
- New York: *G. F. Atkinson*, 8026, and *W. H. Wright*, comm. by G. F. Atkinson, 7990; Alcove, *C. L. Shear*, 995; Fall Creek, *W. H. Wright*, 7992; Floodwood, *E. A. Burt*.
- Pennsylvania: Spruce Creek, *J. H. Faull*, Univ. Toronto Herb., 337 (in Mo. Bot. Gard. Herb., 44883); West Chester, *Everhart & Haines*, in Ellis, N. Am. Fungi, 1204.

North Carolina: *Schweinitz*, types of *T. ochracea* and *T. subzonata* (in *Herb. Schweinitz*); Blowing Rock, *G. F. Atkinson*, 4308.

South Carolina: Clemson College, *P. H. Rolfs*.

Michigan: Cadillac, *H. D. House*, 1225 (in *N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb.*, 56673); Isle Royale, *Miss A. D. Stucki*, *Univ. Wis. Herb.*, 23; Vermilion, *A. H. W. Povah*, 199 (in *Mo. Bot. Gard. Herb.*, 15145).

Indiana: Crawfordsville, *D. Reddick*, 5, 7, and another specimen, comm. by *H. H. Whetzel*.

West Virginia: Paw Paw, *C. L. Shear*, 1173.

Tennessee: Elkmont, *C. H. Kauffman*, 62 (in *Mo. Bot. Gard. Herb.*, 3972).

Wisconsin: Blue Mounds, *Miss A. D. Stucki*, *Univ. Wis. Herb.*, 8, 9; Madison, *Miss A. D. Stucki*, *Univ. Wis. Herb.*, 34, and *W. Trelease*, 5, 26 (in *Mo. Bot. Gard. Herb.*, 56683, 56684); Palmyra, *Miss A. D. Stucki*, *Univ. Wis. Herb.*, 33.

Minnesota: Lake Itaska, comm. by *E. L. Jensen*, 9 (in *Mo. Bot. Gard. Herb.*, 11088).

Missouri: *B. M. Duggar*, 95; Meramec, *P. Spaulding* (in *Mo. Bot. Gard. Herb.*, 5025).

Arkansas: Womble, *W. H. Long*, 19844, 19883 (in *Mo. Bot. Gard. Herb.*, 8963, 14651).

Nebraska: Lincoln, *C. L. Shear*, 1023.

Montana: Evaro, *J. R. Weir*, 431 (in *Mo. Bot. Gard. Herb.*, 22515); Mystic Lake, *C. L. Shear*, 1102.

Colorado: Steamboat Springs, *E. Bartholomew*, 5578 (in *Mo. Bot. Gard. Herb.*, 9185, 44584); Tolland, *F. J. Seaver & E. Bethel* (in *N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb.*, 56674).

New Mexico: Albuquerque, *W. H. Long*, 21153 (in *Mo. Bot. Gard. Herb.*, 55112); Cloudcroft, *F. S. Earle*, 495, comm. by *N. Y. Bot. Gard. Herb.*, and *W. H. Long*, 19542 (in *Mo. Bot. Gard. Herb.*, 55111); Tejano Exp. Station, *W. H. Long*, 21875, 21894, 21907 (in *Mo. Bot. Gard. Herb.*, 55161–55163); Tyom Exp. Station, *W. H. Long*, 21365, 21366, 21426 (in *Mo. Bot. Gard. Herb.*, 55113, 55114, 55160); Ute Park, *P. C. Standley*, 14197, comm. by *N. Y. Bot. Gard. Herb.* (in *Mo. Bot. Gard. Herb.*, 44953); Weeds,

*L. Wymans*, comm. by W. H. Long, 12969 (in Mo. Bot. Gard. Herb., 55110).

Idaho: Priest River, *J. R. Weir*, 19, 31, 48.

British Columbia: New Westminster, *A. I. Hill* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56675); Oak Bay, *J. Macoun*, 579a (in Mo. Bot. Gard. Herb., 55310); Sidney, *J. Macoun*, 46, 47, 49, 52, 52 bis, 53, 54, 84 (in Mo. Bot. Gard. Herb., 5736, 6674, 6694, 6682, 55361, 6698, 6697, 6704 respectively).

Washington: Bingen, *W. N. Suksdorf*, 692, 693, 709, 874, 891, 893, 916, 953; Kalama, *C. J. Humphrey*, 6140; Chehalis, *C. J. Humphrey*, 6254 (in Mo. Bot. Gard. Herb., 16677); Olympia, *C. J. Humphrey*, 6310; Seattle, *S. M. Zeller*, 119 (in Mo. Bot. Gard. Herb., 44139); Tacoma, *W. A. Murrill*, 127, 142, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 55744, 55730).

Oregon: Corvallis, *C. E. Owens*, 2036, 2054, 2057, 2084, 2135, 2136, 2139, 2142, 2143 (in Mo. Bot. Gard. Herb., 43872, 43878, 43877, 44249, 44695, 44694, 44693, 44699, 44702 respectively), and *S. M. Zeller*, 1814 (in Mo. Bot. Gard. Herb., 56332); Eugene, *C. J. Humphrey*, 6050, 6063, 6076 (in Mo. Bot. Gard. Herb., 17175); Mt. Hood, *G. G. Hedgcock*, comm. by *C. J. Humphrey*, 2569 (in Mo. Bot. Gard. Herb., 16418); Granite Pass, *J. R. Weir*, 8680, 8681 (in Mo. Bot. Gard. Herb., 36752, 36753).

California: *R. A. Harper*, 8, 109, 141, 143 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56678–56681), and *Miss E. Hyatt*, comm. by *C. L. Shear*, 1089; Berkeley, *C. J. Humphrey*, 5970, 5982, *H. A. Lee*, Univ. Calif. Herb., 1015, 1016, 1019, 1021, 1022 (in Mo. Bot. Gard. Herb., 44154–44156, 44152, 44157 respectively), *W. A. Setchell*, Univ. Calif. Herb., 1023, 1024 (in Mo. Bot. Gard. Herb., 44153, 44245), and *G. Courvoisier*, Univ. Calif. Herb., 1025 (in Mo. Bot. Gard. Herb., 44149); Claremont, *D. L. Crawford*, D 12, comm. by *L. O. Overholts*, 3280 (in Mo. Bot. Gard. Herb., 10479); Coast Range, *C. F. Baker*, 82, 101, comm. by N. Y. Bot. Gard. Herb.; Fair Oaks, *R. A. Harper* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56676); Julian, *E. Bethel*, 28272 (in Mo. Bot. Gard. Herb., 55439); North-

brae, *L. S. Smith*, Univ. Calif. Herb., 416 (in Mo. Bot. Gard. Herb., 44148); Muir Woods, *W. A. Murrill*, 1133 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 55713); Pinehurst, *E. Bethel*, 26269, 26274 (in Mo. Bot. Gard. Herb., 55438, 55440); Preston's Ravine, *W. A. Murrill & L. S. Abrams*, 1171, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 55707); San Francisco, *W. A. Setchell & C. C. Dolier*, *W. A. Murrill*, 1111, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 55702); Santa Barbara, *O. M. Oleson*, 6, 9, 16; Santa Cruz, *G. J. Streater* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56677); Sutro Forest, *A. S. Rhoads*, 1 (in Mo. Bot. Gard. Herb., 56045).

Mexico: Coyoacan, *Roldan*, comm. by J. R. Weir, 14937, 14999 (in Mo. Bot. Gard. Herb., 56795, 56796).

**44. *S. fasciatum*** Schweinitz, Naturforsch. Ges. Leipzig Schrift. 1: 106. 1832 (under *B. Sterea* of *Thelephora*); Fries, Epier. 546. 1838 Sacc. Syll. Fung. 6: 560. 1888; Masee, Linn. Soc. Bot. Jour. 27: 180. 1890.

Plate 5, figs. 43–45.

*Thelephora versicolor*  $\beta$  *fasciata* (Schw.) Fries, Elenchus Fung. 1: 175. 1828; Schweinitz, Am. Phil. Soc. Trans. N. S. 4: 167. 1832.—*T. ostrea* Blume & Nees, Acad. Leop.-Carol. Nov. Acta 13<sup>1</sup>: 13. pl. 2. 1826.—*Stereum ostrea* (Bl. & Nees) Fries, Epier. 547. 1838; Sacc. Syll. Fung. 6: 571. 1888; Bresadola, Hedwigia 51: 321. 1912.—*Thelephora* (*Stereum*) *mollis* Léveillé, Ann. Sci. Nat. Bot. III. 5: 147. 1846.—*Stereum molle* Léveillé in Sacc. Syll. Fung. 6: 577. 1888; Masee, Linn. Soc. Bot. Jour. 27: 175. 1890.—*S. arcticum* Fries, Hym. Eur. 639. 1874.

Type: in Herb. Schweinitz and in Curtis Herb.

Fructifications coriaceous, rigid, in the north at first broadly effuso-reflexed with the resupinate portion narrow, soon umbonate sessile—perhaps so from the first in the tropics—often laterally confluent, sometimes pseudo-stipitate by prolongation

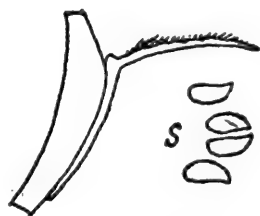


Fig. 23. *S. fasciatum*. Section of reflexed stage, natural size; spores, *s*,  $\times 665$ .

of the umbo, at first densely tomentose and drying warm buff to tawny olive, at length weathering to pale smoke-gray to neutral gray and sometimes with the tomentum torn apart in narrow zones and showing the hazel or chestnut surface of the bared areas, the margin normally entire; in structure 400–700  $\mu$  thick, with the intermediate layer composed of very densely arranged, hyaline hyphae 4  $\mu$  in diameter and bordered on the upper side by a broad dark zone which bears the tomentum of the upper surface; hymenium glabrous, usually warm buff to cinnamon-buff, sometimes assuming violaceous tints; no cystidia, gloeocystidia, nor conducting organs; spores from spore collections white, even, flattened on one side,  $5\frac{1}{2}$ – $7\frac{1}{2} \times 2\frac{1}{2}$ –3  $\mu$ .

Fructifications 2–7 cm. in diameter, often laterally confluent.

On logs and stumps of *Quercus* and other hardwood species. Common throughout North America from Canada southward, in the West Indies, and in South America; occurs also in Norway, Sweden, Formosa, and Java, although apparently rare in the Old World. In vegetative condition from June onward in the north, persisting throughout the year.

Specimens of *S. fasciatum* may be distinguished from those of the less common *S. lobatum* by the thicker tomentose covering of the former, which may continue unbroken throughout the year or become torn apart so as to show rather few and narrow, bared chestnut zones; the pileus of *S. fasciatum* is thicker than that of *S. lobatum*, and the margin has a lobate tendency but rarely. Towards the northern part of its range where I have observed the development of fructifications throughout the season, the fructifications are at first effuso-reflexed with the resupinate portion up to 1 cm. broad, the reflexed portion  $1\frac{1}{2}$  cm. from base to margin, and with a lateral extent along the substratum of 2–8 cm.; umbos soon form at points 1–2 cm. apart along line of intersection of the plane of reflexed portion with the substratum; by further growth outward of the laterally confluent pilei these umbos become the final points of attachment of the pilei with the substratum. In Washington and California the fructifications may continue broadly reflexed when old and are difficult to distinguish from luxuriantly grown *S. hirsutum*.

The specimens from Formosa, cited below, are in the stage in

which the fructifications are still with a resupinate portion but with the umbos distinctly outlined, and exactly agree in all respects, even including spore dimensions, with my Vermont collections of the same stage. The authentic specimen of *Thelephora ostrea* from Java is in the final stage with attachment by umbo only and is clothed over its whole upper surface with a thick coat of tomentum, and matches well most of the specimens of the type collection of *Stereum fasciatum* in Herb. Schweinitz. I infer from the lack of specimens of *S. fasciatum* from the East Indies and the Philippines in published exsiccati, that this species is very rare there and that what frequently has been listed as *S. ostrea* is really the very common *S. concolor* instead.

Schweinitz's original description of *S. fasciatum* presents at such length the disappearance of tomentum from the upper surface of the pileus and the broad, glabrous, shining surface with many vari-colored zones, that it seems probable he may have intended the description to comprehend not only *S. fasciatum* as treated by me but also *S. lobatum*, which he must have seen about him in North Carolina; nevertheless, the ample collection of specimens in Herb. Schweinitz which were preserved as the type of *S. fasciatum* contains no fructifications referable to *S. lobatum*.

Specimens examined:

Exsiccati: Bartholomew, Fungi Col., 2590, under the name *S. versicolor*, 2884, under the name *S. versicolor*, 2985, 3985, 4291, and 4986; Ellis, N. Am. Fungi, 18, under the name *S. versicolor* v. *fasciata*, 514a, and c, both under the name *S. versicolor*; Ell. & Ev., N. Am. Fungi, 1714, under the name *S. purpureum*; Ellis & Ev., Fungi Col., 306, under the name *S. versicolor*; Ravenel, Fungi Am., 220, under the name *S. versicolor*, and 721; Smith, Central Am. Fungi, 145, under the name *S. versicolor*; de Thümen, Myc. Univ., 2011, mixed with *S. lobatum*.

Norway: Bosekon, Finmark, *M. N. Blytt*, type of *Stereum arcticum* (in Herb. Fries).

Sweden: on *Alnus*, North Sweden, comm. by L. Romell, 400.

Canada: *J. Macoun*, 12.

Prince Edward Island: *J. Macoun*, 346 (in Macoun Herb.).

Quebec: *J. Macoun*, 77, 239, 249, 464 (all in Macoun Herb.)

- Ontario: Bond Lake, *J. H. Faull*, Univ. Toronto Herb., 319 (in Mo. Bot. Gard. Herb., 44874); Ottawa, *J. Macoun*, 50; Port Credit, *J. H. Faull*, Univ. Toronto Herb., 352, 354 (in Mo. Bot. Gard. Herb., 44857, 44856); Rondeau Park, *J. H. Faull*, Univ. Toronto Herb., 358 (in Mo. Bot. Gard. Herb., 44870); Toronto, *J. H. Faull*, Univ. Toronto Herb., 356 (in Mo. Bot. Gard. Herb., 44868), *T. Langton*, Univ. Toronto Herb., 501 (in Mo. Bot. Gard. Herb., 44853), *G. H. Graham*, Univ. Toronto Herb., 680 (in Mo. Bot. Gard. Herb., 44937).
- Maine: Harrison, *J. Blake*, comm. by P. L. Ricker; Orono, *F. L. Harvey*, comm. by P. L. Ricker; Portage, *L. W. Riddle*, 2, 17.
- Vermont: Middlebury, *E. Brainerd*, *E. A. Burt*, nine collections; Ripton, *E. A. Burt*.
- Massachusetts: Amherst, *P. J. Anderson*, 2, 4 (in Mo. Bot. Gard. Herb., 55846, 55845 respectively).
- Connecticut: Mansfield, *P. W. Graff*, 30 (in Mo. Bot. Gard. Herb., 44803); New Haven, *W. A. Setchell*; Norwich, *W. A. Setchell*.
- New York: *Sartwell*, 19 (in Mo. Bot. Gard. Herb., 5076); Alcove, *C. L. Shear*, 1327; Canandaigua, *L. M. Underwood*, 21, distributed under the name *S. versicolor* (in Mo. Bot. Gard. Herb., 5117); East Galway, *E. A. Burt*; Floodwood, *E. A. Burt*; Freeville, *G. F. Atkinson*, 2821; Glasco, *P. Wilson*, 48, 43 (in Mo. Bot. Gard. Herb., 54752, 54754); Grand View, *H. von Schrenk* (in Mo. Bot. Gard. Herb., 42811, 43025); Ithaca, *G. F. Atkinson*, 2819, 2820, 8027, Bot. Dept. Cornell Univ., 133 O. S., 2871, *H. S. Jackson*, comm. by Bot. Dept. Cornell Univ., 14397–14399, *Van Hook*, comm. by Bot. Dept. Cornell Univ., 8084, *W. C. Muenscher*, 147, 205, 211 (in Mo. Bot. Gard. Herb., 56602–56604); Palisades, *P. Wilson*, 20, 18, 12 (in Mo. Bot. Gard. Herb., 54755, 54756, 54759); Yonkers, *P. Wilson*, 61 (in Mo. Bot. Gard. Herb., 54753).
- New Jersey: Alpine, *P. Wilson*, 17, 13, 7 (in Mo. Bot. Gard. Herb., 54757, 54758, and 54760 respectively); Belleplain, *C. L. Shear*, 1250; Newfield, *J. B. Ellis*, in *Ellis*, N. Am. Fungi, 18, 514c, and *Ell. & Ev.*, Fungi Col., 306.

Pennsylvania: *E. Michener*, 88 (in Mo. Bot. Gard. Herb., 5044); Germantown, *E. A. Burt*; Huntington Co., *A. S. Rhoads*, 7 (in Mo. Bot. Gard. Herb., 44084); Lancaster City, *Mrs. A. F. Eby* (in Mo. Bot. Gard. Herb., 5083); Kittanning, *D. R. Sumstine*, 4, 7, 7; Philadelphia, *A. S. Rhoads*, 19 (in Mo. Bot. Gard. Herb., 44096); in coal mine, Pottsville, *C. J. Humphrey*, 310; Spruce Creek, *J. H. Faull*, Univ. Toronto Herb., 357, 359, 334, 670, 355, 667 (in Mo. Bot. Gard. Herb., 44869, 44871, 44888, 44917, 44926, and 44934 respectively); Shingleton Gap, *A. S. Rhoads*, 15 (in Mo. Bot. Gard. Herb., 44093); State College, *C. R. Orton*, 1, 18 (in Mo. Bot. Gard. Herb., 44079, 44095), comm. by L. O. Overholts, 2658, 5003 (in Mo. Bot. Gard. Herb., 5721, 56345), *A. S. Rhoads*, 16 (in Mo. Bot. Gard. Herb., 44094); Trexlertown, *C. G. Lloyd*, 0084; in coal mine, Wadesville Colliery, *C. J. Humphrey*, 21583.

Maryland: Glen Sligo, *C. L. Shear*, 1133.

District of Columbia: Takoma Park, *P. L. Ricker*, 820, *C. L. Shear*, 956.

Virginia: Great Falls, *O. F. Cook*, comm. by P. L. Ricker; Mt. Vernon, *P. L. Ricker*, 1121 in part; Mountain Lake, *W. A. Merrill*, 408 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56618); Norton, *A. B. Seymour* (in Mo. Bot. Gard. Herb., 16405).

North Carolina: *Schweinitz*, type (in Herb. Schweinitz and Curtis Herb.); Blowing Rock, *G. F. Atkinson*, 4178, 4180, 4315; Chapel Hill, *W. C. Coker*, 938 (in Mo. Bot. Gard. Herb., 56665); Leicester, *B. B. Higgins*, in Bartholomew, Fungi Col., 2985.

South Carolina: Clemson College, *P. H. Rolfs*, 1613, 1616, 1619, 1620, 1624, 1629, 1631, 1635.

Georgia: Darien, *H. W. Ravenel*, in Ravenel, Fungi Am., 220, 721; Dixie, *R. M. Harper*, 1633b, comm. by N. Y. Bot. Gard. Herb.; Tallulah Falls, *A. B. Seymour*, comm. by W. G. Farlow, 6 (in Mo. Bot. Gard. Herb., 55290).

Florida: *C. G. Lloyd* (in Mo. Bot. Gard. Herb., 44068); Coconut Grove, *H. von Schrenk* (in Mo. Bot. Gard. Herb., 43097); Eustis, *L. M. Underwood*, 1368, 1801 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56616, 56617).

- Alabama: Adger, *C. J. Humphrey*; Montgomery Co., *R. P. Burke*, 34 (in Mo. Bot. Gard. Herb., 4273); Maplesville, *C. S. Hill*, comm. by *C. J. Humphrey*, 251.
- Mississippi: Laurel, *C. J. Humphrey*, 5431, 5435; Ocean Springs, *F. S. Earle* (in Mo. Bot. Gard. Herb., 5118).
- Louisiana: Baton Rouge, *C. W. Edgerton*, 848, comm. by *C. J. Humphrey*; St. Martinville, *A. B. Langlois*, 2902, bf.
- Ohio: Cincinnati, *D. L. James*, in Ellis, *N. Am. Fungi*, 514c, *C. G. Lloyd*, 1579, 4499, 4501, 4506; Columbus, *W. A. Kellerman*, in Kellerman, *Ohio Fungi*, 33, under the name *S. versicolor*; Granville, *H. L. Jones*; Linwood, *C. G. Lloyd*, 2436, 02821, 02830; Penfield, *F. D. Kelsey* (in Mo. Bot. Gard. Herb., 5075); Worthington, *Dr. Paddock* (in Mo. Bot. Gard. Herb., 5114, 5157).
- Kentucky: Bowling Green, *Miss S. F. Price* (in Mo. Bot. Gard. Herb., 5038, 5112, 56604); Mammoth Cave, *C. G. Lloyd*.
- Tennessee: Algood, *C. J. Humphrey*, 308.
- Michigan: Isle Royale, *Allen & Stuntz*, 22, 60; Sailor's Encampment, *E. T. & S. A. Harper*, 710; Vermilion, *A. H. W. Povah*, 142 (in Mo. Bot. Gard. Herb., 15144).
- Wisconsin: Bayfield, *V. B. Walker*, 6b (in Mo. Bot. Gard. Herb., 9733); Blanchardville, *Miss A. O. Stucki*, 47; Blue Mounds, *Miss A. O. Stucki*, 49; Ithaca, *W. Trelease*, 89 (in Mo. Bot. Gard. Herb., 56606); Madison, *E. T. Bartholomew*, in Bartholomew, *Fungi Col.*, 3985, *Miss A. O. Stucki*, 31, 35, 36, 50, *W. Trelease* (in Mo. Bot. Gard. Herb., 56605); Syene, *W. Trelease*, 90 (in Mo. Bot. Gard. Herb., 5072).
- Indiana: Greencastle, *L. M. Underwood*, 2 (in Mo. Bot. Gard. Herb., 44101); Hibernian Mills, *etzel & Reddick*, comm. by *D. Reddick*, 6, 8; Ladoga, *P. J. Anderson*, 1 (in Mo. Bot. Gard. Herb., 55838); Wabash "bottom", *W. Trelease* (in Mo. Bot. Gard. Herb., 5073).
- Illinois: Brownsville, *E. T. & S. A. Harper*, 951; Cobden (in Mo. Bot. Gard. Herb., 44102); Grand Pass Club, *W. Trelease* (in Mo. Bot. Gard. Herb., 5053); Jacksonville, *E. Bartholomew*, in Bartholomew, *Fungi Col.*, 2590.
- Missouri: Bismarck, *L. O. Overholts* (in Mo. Bot. Gard. Herb., 43702); Clayton, *A. M. Ferguson* (in Mo. Bot. Gard. Herb., 5131); Columbia, *B. M. Duggar*, 346a, 562, 580; Creve

- Coeur, *E. A. Burt* (in Mo. Bot. Gard. Herb., 8727); Lincoln Co., *C. Trenning* (in Mo. Bot. Gard. Herb., 4098); Meramec, *P. Spaulding*, 1, and (in Mo. Bot. Gard. Herb., 5020), *Spaulding & Johnson* (in Mo. Bot. Gard. Herb., 5013-5015); Meramec Highlands, *N. M. Glatfelter* (in Mo. Bot. Gard. Herb., 42583); Old Orchard, *L. H. Pammel* (in Mo. Bot. Gard. Herb., 5020, 5041); Piedmont (in Mo. Bot. Gard. Herb., 4783); Upper Creve Coeur, *E. A. Burt* (in Mo. Bot. Gard. Herb., 44057); Valley Park, *H. von Schrenk* (in Mo. Bot. Gard. Herb., 42859); White House, *E. A. Burt* (in Mo. Bot. Gard. Herb., 43808), contains mesopod specimen; Willow Springs, *H. von Schrenk*, 1, 2 (in Burt Herb. and Mo. Bot. Gard. Herb., 42886, 42851).
- Arkansas: Bertig, *W. Trelease* (in Mo. Bot. Gard. Herb., 5148); Big Flat, *W. H. Long*, 19859 (in Mo. Bot. Gard. Herb., 8268); Fayetteville, *E. Bartholomew*, in Bartholomew, Fungi Col., 2884; Womble, *W. H. Long*, 19866 (in Mo. Bot. Gard. Herb., 8889); Wynne, *W. Trelease* (in Mo. Bot. Gard. Herb., 5147, 5152).
- Oklahoma: Poteau, *W. Trelease* (in Mo. Bot. Gard. Herb., 5052); Spiro, *E. Bartholomew*, in Bartholomew, Fungi Col., 4291.
- Texas: *L. H. Pammel* (in Mo. Bot. Gard. Herb., 56607); Austin, *W. H. Long, Jr.*, 739; Gillespie County, *G. Jermy* (in Mo. Bot. Gard. Herb., 5048-5050) and 443, comm. by U. S. Dept. Agr. Herb.; Joaquin, *E. Bartholomew*, in Bartholomew, Fungi Col., 4986; Quitman, *W. H. Long*, 12099 (in Mo. Bot. Gard. Herb., 55126); Waco, *W. H. Long, Jr.*, 508.
- South Dakota: Black Hills, *J. R. Weir*, 10012 (in Mo. Bot. Gard. Herb., 55793).
- Nebraska: Memphis, *T. A. Williams*, comm. by C. L. Shear, 1059; Nebraska City, *V. B. Walker*, 10 (in Mo. Bot. Gard. Herb., 12963).
- Kansas: Bourbon County, *A. G. Barrett*, 112, 115, 126, 127; Topeka, *E. T. & S. A. Harper*, 753.
- Colorado: Golden, *Bethel & Overholts*, comm. by L. O. Overholts, 1758 (in Mo. Bot. Gard. Herb., 54871).
- New Mexico: Cloudcroft, *F. S. Earle*, 495 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 1546).

- Montana: Moeville, *J. A. Hughes*, comm. by *J. R. Weir*, 9750 (in *Mo. Bot. Gard. Herb.*, 56225).
- Idaho: Moscow, *J. R. Weir*, 7946 (in *Mo. Bot. Gard. Herb.*, 56218); Priest River, *J. R. Weir*, 6, 11, 49.
- British Columbia: Secamons, *J. Macoun*, 166; Sidney, *J. Macoun*, 57, 70, 71 (in *Mo. Bot. Gard. Herb.*, 5739, 5746, 5747).
- Washington: Bingen, *W. N. Suksdorf*, 694; Friday Harbor, *V. B. Walker*, 2 (in *Mo. Bot. Gard. Herb.*, 8359); Lake Waldemen, *C. H. Kauffman* (in *Mo. Bot. Gard. Herb.*, 20763); Seattle, *S. M. Zeller*, 63, 118 (in *Mo. Bot. Gard. Herb.*, 44137, 44143); Tacoma, *E. Bartholomew*, 4929 (in *Mo. Bot. Gard. Herb.*, 20810).
- Oregon: Corvallis, *C. E. Owens*, 2032, 2026, 2055, 2140, 2141 (in *Mo. Bot. Gard. Herb.*, 43874-43876, 44700, 44701); Granite Pass, *J. R. Weir*, 8675 (in *Mo. Bot. Gard. Herb.*, 36750); Wallowa, *C. J. Humphrey*, 265; Siskiyou National Forest, *J. R. Weir*, 8678 (in *Mo. Bot. Gard. Herb.*, 36751).
- California: *R. A. Harper*, 39, 108, 142 (in *N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb.*, 56610-12); *C. R. Orcutt*, in *Ell. & Ev.*, *N. Am. Fungi*, 714; La Honda, *Edna Hyatt*, comm. by *C. L. Shear*, 1088, 1091; Muir Woods, *W. A. Murrill*, 1158, comm. by *N. Y. Bot. Gard. Herb.* (in *Mo. Bot. Gard. Herb.*, 55715); Redding, *C. J. Humphrey*, 1035; San Francisco, *A. S. Rhoads*, 2 (in *Mo. Bot. Gard. Herb.*, 56046); Saratoga, *E. B. Copeland*, 1806.
- Arizona: Crown King, *G. G. Hedgcock*, comm. by *C. J. Humphrey*, 2564 (in *Mo. Bot. Gard. Herb.*, 10752).
- Mexico: Cordoba, *W. A. & E. L. Murrill*, 996, comm. by *N. Y. Bot. Gard. Herb.* (in *Mo. Bot. Gard. Herb.*, 54609); Guernavaca, *W. A. & E. L. Murrill*, 415, 416, 412, comm. by *N. Y. Bot. Gard. Herb.* (in *Mo. Bot. Gard. Herb.*, 54518, 54519, 54543); Jalapa, *W. A. & E. L. Murrill*, 75, 148, 193, comm. by *N. Y. Bot. Gard. Herb.* (in *Mo. Bot. Gard. Herb.*, 11275, 10360, 54436), *C. L. Smith*, in *Smith, Central Am. Fungi*, 145; Oaxaca, *E. W. D. Holway*; Orizaba, *W. A. & E. L. Murrill*, 758, comm. by *N. Y. Bot. Gard. Herb.* (in *Mo. Bot. Gard. Herb.*, 54632); Parral, *E. O. Matthews* (in *Mo. Bot. Gard. Herb.*, 5722, 10459).
- Guatemala: *Maxon & Hay*, 3250, comm. by *U. S. Bur. Pl. Ind.*

- Honduras: *P. Wilson*, 138, comm. by N. Y. Bot. Gard. Herb.
- Cuba: Ciego de Avila, *Earle & Murrill*, 568, comm. by N. Y. Bot. Gard. Herb.; Fecha, *F. S. Earle*, 146, *Earle & Wilson*, 224; Guantanamo, *J. R. Weir*, 10644 (in Mo. Bot. Gard. Herb., 56237); Oriente, *J. A. Shafer*, 3392, 8468 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56613, 56614); San Diego de los Baños, *Earle & Murrill*, 331, comm. by N. Y. Bot. Gard. Herb.
- Porto Rico: Bayamon, *J. A. Stevenson*, 5427 (in Mo. Bot. Gard. Herb., 8180); Mayaguez, *F. S. Earle*, 89, comm. by N. Y. Bot. Gard. Herb.; Rio Piedras, *Johnston & Stevenson*, comm. by J. A. Stevenson, 1764, 1937, 2005 (in Mo. Bot. Gard. Herb., 9824, 14220, 14270); San Jaun, *Mr. & Mrs. A. S. Heller*, 700, comm. by N. Y. Bot. Gard. Herb.
- Jamaica: Cinchona, *W. A. & E. L. Murrill*, 450, 499, 521, comm. by N. Y. Bot. Gard. Herb., *H. von Schrenk* (in Mo. Bot. Gard. Herb., 43630); Chester Vale, *W. A. & E. L. Murrill*, 282, 316, comm. by N. Y. Bot. Gard. Herb.; Monkey Hill, *W. A. Murrill*, 817, comm. by N. Y. Bot. Gard. Herb.; Moore Town, *W. A. & E. L. Murrill*, 160, comm. by N. Y. Bot. Gard. Herb.
- Brazil: *Malme* (in Romell Herb.).
- Formosa: Urai, *S. Kusano*, II.16 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56587).
- Java: *Junghuhn*, authentic specimen of *Thelephora ostrea*, comm. by G. Bresadola.
- Philippine Islands: Luzon, *H. M. Curran*, Forestry Bureau, 9665 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56583); Mindanao, *A. D. E. Elmer*, 10556, Philippine Is. Pl. (in Mo. Bot. Gard. Herb., 705743).

**45. *S. lobatum*** (Kunze) Fries, Epicr. 547. 1838; Sacc. Syll. Fung. 6: 568. 1888; Masee, Linn. Soc. Bot. Jour. 27: 175. 1890. Plate 5, fig. 46.

*Thelephora lobata* Kunze in Weigelt Exsiccati, 1827; Fries, Linnaea 5: 527. 1830.—*Stereum Sprucei* Berk. & Curtis, Linn. Soc. Bot. Jour. 10: 331. 1868; Sacc. Syll. Fung. 6: 567. 1888.—An *S. concolor* Junghuhn, Crypt. Java, 38. 1838? See Sacc. Syll. Fung. 6: 561. 1888; Bresadola, Hedwigia 51: 321. 1912.

Illustrations: Engl. & Prantl, Nat. Pflanzenfam. (1: 1\*\*): 124. text f. 69, A-B; Hard, Mushrooms, 455. text f. 382, as *S. versicolor*.

Type: type distribution in Weigelt Exs.

Fructifications coriaceous, rigid, thin, wedge-shaped to umbonate, sessile, often laterally conrescent, at first tomentose and drying tawny olive, at length with the tomentum becoming pale smoke-gray to whitish, disappearing more or less near the margin and in narrow zones and showing the glabrous, shining, hazel surface of the bared areas, the margin undulate and usually more or less lobed; in structure 300  $\mu$  thick, with the intermediate layer composed of densely arranged, thick-walled, hyaline hyphae 4-4½  $\mu$  in diameter; hymenium glabrous, even, usually drying pinkish buff; no setae, gloeocystidia, nor conducting organs; spores hyaline, even, flattened on one side, 4-5  $\times$  1½-2  $\mu$ , but few seen.

Pileus usually 3-7 cm. long, 2-6 cm. broad, sometimes much larger by lateral confluence.

On dead branches, logs, and stumps of frondose species in the cases noted. A tropical species ranging northward to New York and Wisconsin and southward to Brazil. Occurs in the Philippine Islands and East Indies also, if *S. concolor* is a synonym.

*S. lobatum* may be distinguished from the related *S. fasciatum*, *S. versicolor*, and *S. radians* by having a more or less lobate pileus which is also very thin, somewhat flexible, zonate on the upper side, with glabrous, shining hazel zones alternating with whitish tomentose zones of soft, matted hairs. No specimens of this species which I have examined have the pileus effuso-reflexed when young. Specimens of *S. fasciatum* occasionally have a somewhat lobate margin but the pileus is thicker, more heavily clothed with a tomentum which is more persistent than that of *S. lobatum*, and in its more northern stations where I have been able to observe the development, the young fructifications are often effuso-reflexed at first.

*S. lobatum* is primarily an American species described from collections made in Surinam, Dutch Guiana, but it seems probable that this species has a more extended geographical range through the tropical lands of the Eastern Hemisphere also. The recent collections in Philippine Islands, determined by

Bresadola as *S. concolor* (Jungh.) and distributed in Elmer, Philippine Islands Plants, show that this species is but slightly, if at all, different from *S. lobatum*. The general aspect is the same but the Philippine specimens are the larger; none of them have their tomentum as soft and whitish as in *S. lobatum*. Some of these specimens have shown in crushed preparations spore-like bodies  $3\mu$  in diameter; spore collections of oriental specimens should be made.

Specimens examined:

Exsiccati: Bartholomew, Fungi Col., 4586, under the name *S. fasciatum*; Ellis, N. Am. Fungi, 514b, under the name *S. versicolor* v. *fasciata*, 514d, under the name *S. versicolor* v. *petaliforme*; Ravenel, Fungi Car. 1: 28, mixed with *S. fasciatum*; de Thümen, Myc. Univ., 2011, mixed with *S. fasciatum*.

New York: Alcove, C. L. Shear, 1019; Ithaca, L. A. Zinn, 82a (in Mo. Bot. Gard. Herb., 43074).

Pennsylvania: West Chester, J. B. Gray, in Ellis, N. Am. Fungi, 514b.

North Carolina: Black Oak, H. W. Ravenel, in Ravenel, Fungi Car. 1: 28; Blowing Rock, G. F. Atkinson, 4311, 4314; Chapel Hill, W. C. Coker, 331 (in Mo. Bot. Gard. Herb., 56663); Transylvania County, W. A. Murrill & H. D. House, 425 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56602).

Georgia: Flint River, R. M. Harper, 1401a, comm. by N. Y. Bot. Gard. Herb. (also in Mo. Bot. Gard. Herb., 5087); Dixie, R. M. Harper, 1633 (in Mo. Bot. Gard. Herb., 56603).

Florida: C. G. Lloyd, 4833; Crescent City, Dr. G. Martin, in Ellis, N. Am. Fungi, 514d; Eustis, G. V. Nash, 2128 (in Mo. Bot. Gard. Herb., 5118), and L. M. Underwood, 1371 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56601); Lake City, P. L. Ricker, 893; New Smyrna, C. G. Lloyd, 183; Tallahassee, E. Bartholomew, in Bartholomew, Fungi Col., 4586.

Alabama: Auburn, F. S. Earle, from Lloyd Herb., 3459; Cheshaw, E. A. Burt, two collections; Fayette Co., P. V. Siggers, comm. by A. H. W. Povah, 14 (in Mo. Bot. Gard. Herb., 9229).

- Louisiana: Natchitoches, *G. F. Atkinson*, 5118, 5119; St. Martinville, *A. B. Langlois*, *be*.
- Ohio: Cincinnati, *C. G. Lloyd*, 1677, 4495, 4502.
- Wisconsin: Madison, *C. J. Humphrey*, 2508 (in Mo. Bot. Gard. Herb., 42927).
- Kentucky: Mammoth Cave, *C. G. Lloyd*.
- Missouri: Kennett, *H. von Schrenk* (in Mo. Bot. Gard. Herb., 42996); Neeleyville, *F. C. Dewart* (in Mo. Bot. Gard. Herb., 5132, 5135).
- Mexico: *W. Trelease* (in Mo. Bot. Gard. Herb., 5123); Guernavaca, *E. W. D. Holway*.
- Honduras: *P. Wilson*, 180, 671, comm. by N. Y. Bot. Gard. Herb.
- Cuba: *C. Wright*, 197, 271 (in Curtis Herb.), and 521, the type of *S. Sprucei* (in Kew Herb.); Baracoa, *L. M. Underwood & F. S. Earle*, 796, 1068, comm. by N. Y. Bot. Gard. Herb.; Ceballos, *C. J. Humphrey*, 2722 (in Mo. Bot. Gard. Herb., 8638).
- Porto Rico: Sauerce, *Mr. & Mrs. A. A. Heller*, 843, 882, comm. by N. Y. Bot. Gard. Herb.; Luquillo Mts., *P. Wilson*, 203 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56600).
- Guadeloupe: in de Thümen, Myc. Univ., 2001.
- St. Kitts: *N. L. Britton & J. F. Cowell*, 502, comm. by N. Y. Bot. Gard. Herb.
- Jamaica: *A. E. Wight*, comm. by W. G. Farlow; Castleton Gardens, *W. A. & E. L. Merrill*, 113, comm. by N. Y. Bot. Gard. Herb.; Cinchona, *W. A. & E. L. Merrill*, 530, comm. by N. Y. Bot. Gard. Herb.; Moneague, *W. A. Merrill*, 1140, comm. by N. Y. Bot. Gard. Herb.; Troy and Tyre, *W. A. Merrill & W. Harris*, 996, 1037, comm. by N. Y. Bot. Gard. Herb.
- Trinidad: Carengo, *M. A. Carriker*, comm. by W. G. Farlow, II.
- Grenada: Grand Etang, *R. Thaxter*, comm. by W. G. Farlow, 3.
- Venezuela: Margarita, *A. F. Blakeslee*, comm. by W. G. Farlow.

**46. *S. versicolor*** (Swartz) Fries, *Epicr.* 547. 1838; Berkeley, *Ann. & Mag. Nat. Hist.* I. 10: 382. *pl.* 11. *f.* 13. 1842; Sacc.

Syll. Fung. 6: 561. 1888; Masee, Linn. Soc. Bot. Jour. 27: 172. 1890; Lloyd, Myc. Writ. 4. Letter 46:3. 1913.

Plate 5, fig. 47.

*Helvella versicolor* Swartz, Prodr. 149. 1788.—*Thelephora versicolor* Swartz, Fl. Ind. Oc. 3: 1934. 1806; Fries, Syst. Myc. 1: 438. 1821.—*Stereum radians* Fries, R. Soc. Sci. Upsal. Actis III. 1: 110. 1851; Sacc. Syll. Fung. 6: 573. 1888; Masee, Linn. Soc. Bot. Jour. 27: 188. pl. 7. f. 5. 1900.

Illustrations: Berkeley, *loc. cit.*; Masee, *loc. cit.*

Type: authentic specimen in Herb. of Brit. Mus. according to Berkeley.

Fructification coriaceous-rigid, very thin, sometimes buff-yellow, clothed with silky, villous fascicles all lying in a radiating direction, becoming glabrous and shining and minutely radially ridged or lineate, wood-brown to cinnamon-brown, the margin entire, not complicate; in structure 300–400  $\mu$  thick, composed of densely, longitudinally arranged hyphae 3–3½  $\mu$  in diameter; hymenium even, glabrous, cream-color to avellaneous; no colored conducting organs, gloeocystidia, nor cystidia; spores hyaline, even, 4–5  $\times$  2–2½  $\mu$ .

Fructifications 1–2½ cm. broad, 1½–4 cm. long, often laterally confluent.

On dead wood. Florida, West Indies, Mexico, Dutch Guiana. September to February. Probably common in Jamaica.

*S. versicolor* is a species intermediate between *S. lobatum* and *S. rameale*; its fructifications are smaller than those of *S. lobatum*, thinner, more completely glabrous at length, with margin not normally lobed, and usually retaining attachment by a narrow, resupinate side of the pileus as well as by the umbo, in which respect there is resemblance to the middle stage of development of *S. fasciatum*; the radial arrangement of the hairs and villous fascicles on the upper surface of the pileus is a highly distinctive character, as first pointed out by Berkeley. The coloration and hairy covering of fructifications of *S. versicolor* are somewhat similar to these characters in *S. rameale*, but the fructifications of the former are not lobed and folded together laterally and crisped nor as slender as those of *S. rameale*, as pointed out by Fries in his description of his *S. radians*. *S. versicolor* was formerly confused with *S. fasciatum*, especially in American

literature; it is doubtful whether *S. versicolor* occurs in the United States except very rarely in Florida.

Specimens examined:

- Florida: Dade County, *J. K. Small*, 7089, 7122 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56650, 56651); Eustis, Lake County, *L. M. Underwood*, 1377 (in N. Y. Bot. Gard. Herb., Burt Herb., and Mo. Bot. Gard. Herb., 42764).
- Cuba: *C. Wright*, 291 (in Curtis Herb.); Ceballos, *C. J. Humphrey*, 2740 (in Mo. Bot. Gard. Herb., 15720); San Diego de los Baños, *Bro. Leon*, 4861 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56647).
- Porto Rico: Maricao, *N. L. Britton*, *J. F. Cowell* & *S. Brown*, 4420 (in N. Y. Bot. Gard. Herb., Burt Herb., and Mo. Bot. Gard. Herb., 56574); Rio Piedras, *J. R. Johnston*, 129, 282 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56648, 56641); Sierra de Naguabo, *J. A. Shafer*, 3211, 3692, 3693 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56653-56655).
- Jamaica: *Farr* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56640); Cinchona, *L. M. Underwood*, 3239 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56595), *N. L. Britton*, 295, 296 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56642, 56643), *F. S. Earle*, 409, comm. by N. Y. Bot. Gard. Herb., *W. A. & E. L. Merrill*, 526, 539, comm. by N. Y. Bot. Gard. Herb. and 473 (in N. Y. Bot. Gard. Herb., Burt Herb., and Mo. Bot. Gard. Herb., 56644); John Crow Peak, *L. M. Underwood*, 2433, comm. by N. Y. Bot. Gard. Herb.; Monkey Hill, *W. A. Merrill*, 814, comm. by N. Y. Bot. Gard. Herb.; Rose Hill, *F. S. Earle*, 50, 282, 305, comm. by N. Y. Bot. Gard. Herb.; Sir John Peak, *E. G. Britton*, 1212 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56641); Troy and Tyre, *W. A. Merrill* & *W. Harris*, 853, 856, 1036, 1048, comm. by N. Y. Bot. Gard. Herb.
- Montserrat: Soufriere, *J. A. Shafer*, 919 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56645).
- Grenada: Annandale, *W. E. Broadway* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56656); Grand Etang, *R. Thaxter*, comm. by *W. G. Farlow*, 10.

Mexico: Trap. de la Concepcion, *Liebman*, type of *Stereum radians* (in Herb. Fries); Jalapa, *W. A. & E. L. Merrill*, 343, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 55477).

**47. *S. rameale*** Schweinitz, Naturforsch. Ges. Leipzig Schrift. 1: 106. 1822 (under *B. Sterea* of *Thelephora*). Plate 5, fig. 48.

*Thelephora hirsuta* Fries, Elenchus Fung. 1: 178. 1828, but not of Syst. Myc. 1: 439. 1821.—*T. hirsuta*  $\beta$  *ramealis* Schweinitz, Am. Phil. Soc. Trans. N. S. 4: 167. 1832.—*Stereum complicatum* Fries, Epicr. 548. 1838; Sacc. Syll. Fung. 6: 579. 1888; Masee, Linn. Soc. Bot. Jour. 27: 178. 1890.—*S. radians* of Morgan, Cincinnati Soc. Nat. Hist. Jour. 10: 194. 1888, but not *S. radians* Fries.—*Telephora lobata* Bertolonii, Accad. Sci. Bologna Mem. I. 7: 360. pl. 19. f. e-g. 1856; Underwood & Earle, Ala. Agr. Exp. Sta. Bul. 80: 232. 1897.—*Stereum Bertolonii* Saccardo, Sacc. Syll. Fung. 11: 120. 1895.

Illustrations: Berkeley & Broome, Linn. Soc. Bot. Trans. 2: pl. 14. f. 12-14. 1883; Bertolonii, *loc. cit.*

Type: in Herb. Schweinitz and in Herb. Fries.

Fructifications coriaceous, thin, rigid, effuso-reflexed, rarely resupinate, with the reflexed portion consisting of small, umbo-nate pilei, which are sometimes subdivided into lobes, the pilei or lobes drying folded together or crisped, fibrose-strigose, becoming glabrous on the marginal portion, shining, with innate fibers radiating from the base, cinnamon-buff to hazel, more or less zoned; hymenium even, glabrous, light buff to cream-buff; in structure 300-450  $\mu$  thick, composed of densely, longitudinally arranged, hyaline hyphae 3-3½  $\mu$  in diameter, colored conducting organs 3-3½  $\mu$  in diameter occasionally present; no cystidia nor gloecystidia; spores white in spore collection, even, slightly curved, 6  $\times$  2-2½  $\mu$ .



Fig. 24.  
*S. rameale*.  
Spores  $\times$  650.

Fructifications sometimes covering areas only 5-10 mm. in diameter, and gregarious, at other times irregularly confluent over areas up to 3 cm. broad and 10 cm. and more long; individual pilei 2-10 mm. broad, 3-10 mm. long.

On dead twigs and stumps of oak and other frondose species.

Canada, throughout the United States, except in the Rocky Mountain region, in Mexico and the West Indies. July to January. Common in the United States.

*S. rameale* varies somewhat under the different conditions as to climate and substratum in the great extent of North America where it is our commonest species of *Stereum*. In the United States and Canada one will hardly go amiss in referring to *S. rameale* any *Stereum* with numerous small pilei densely crowded together imbricately or laterally, strigose hairy near the region of attachment, and with marginal side shining, somewhat zonate, and pinkish buff to hazel in color, and with these pilei drying folded together along the sides, or radially plicate in a laterally confluent form. The pileus of *S. rameale* is thinner than that of *S. hirsutum*, only partially covered with hairs, which do not form as heavy a covering where present, and the pilei are folded together laterally and are smaller than those of *S. hirsutum*. *S. sericeum* has small, shining, very thin pilei between whitish and pale drab-gray on both surfaces—wholly lacking ruddy ochraceous coloration—and almost always growing on *Carpinus caroliniana*.

Schweinitz communicated to Fries specimens of *S. rameale* which are still preserved in the herbarium at Upsala; Fries published the species as a synonym of *S. hirsutum* in *Elenchus Fung.*; Schweinitz yielded to the authority of Fries but protested that *S. rameale* was a distinct variety, at least. Other American specimens of this species were received by Fries, who described and published them in 1838 as *S. complicatum*, overlooking the earlier and nearly identical specimens from Schweinitz and the earlier, appropriate name for the species.

Specimens examined:

Exsiccati: Bartholomew, *Fungi Col.*, 2881, 4289, 4689, 4985; Ellis, *N. Am. Fungi*, 324; Ell. & Ev., *Fungi Col.*, 307; Ravenel, *Fungi Car.* 2: 30; *Fungi Am.*, 117; Smith, *Cent. Am. Fungi*, 96, 97—the latter under the name *S. sericeum*; de Thümen, *Myc. Univ.*, 1404.

Canada, Ontario: Belleville, *J. Macoun*, 240; Port Credit, *J. H. Faull*, *Univ. Toronto Herb.*, 317 (in *Mo. Bot. Gard. Herb.*, 44878); Toronto, *R. P. Wodehouse*, *Univ. Toronto Herb.*, 316 (in *Mo. Bot. Gard. Herb.*, 44879).

Maine: Oldtown, *P. L. Ricker*.

Vermont: Brattleboro, Grand View Mt., Lake Dunmore, Middlebury, and Ripton, *E. A. Burt*.

Massachusetts: Arlington, *E. A. Burt*; Amherst, *P. J. Anderson*, 6 (in Mo. Bot. Gard. Herb., 55850); Cambridge, *W. Trelease*, 81 (in Mo. Bot. Gard. Herb., 5062); Stony Brook, *E. A. Burt*; Waltham, *A. B. Seymour*, 12 (in Mo. Bot. Gard. Herb., 22096); Wellesley, *L. W. Riddle*, 12; Worcester, *G. E. Francis*.

Connecticut: *C. C. Hanmer*, 2075 (in Mo. Bot. Gard. Herb., 43849); Mansfield, *P. W. Graff*, 12 (in Mo. Bot. Gard. Herb., 9854); New Canaan, *P. Wilson*, 63 (in Mo. Bot. Gard. Herb., 54739); South Windsor, *C. C. Hanmer*.

New York: *Sartwell* (in Mo. Bot. Gard. Herb., 5062, 44235); Albany, *H. D. House* (in N. Y. State Mus. Herb. and Mo. Bot. Gard. Herb., 15954); Alcove, *C. L. Shear*, 1137, 1320, 1323, 1331; Catskill Mts., *C. H. Peck*, in Ellis, N. Am. Fungi, 324; East Galway, *E. A. Burt*, three collections; Glasco, *P. Wilson*, 34, 37, 41, 57 (in Mo. Bot. Gard. Herb., 54728, 54741, 54742, 54727); Ithaca, *G. F. Atkinson*, 190 O. S., 2121, 7989, 22969, 22973-22975, *C. J. Humphrey*, 227, *H. S. Jackson*, Cornell Univ. Herb., 14375, 14376, *W. A. Merrill*, Cornell Univ. Herb., 3058, *Van Hook*, Cornell Univ. Herb., 7991, *K. M. Wiegand*, Cornell Univ. Herb., 3258, *L. A. Zimm*, 83 (in Mo. Bot. Gard. Herb., 9064); Palisades, *P. Wilson*, 16, 21 (in Mo. Bot. Gard. Herb., 54732, 54731); Scarsdale, *Livingston & Crane*, comm. by N. Y. Bot. Gard. Herb., *P. Wilson*, 1, 25 (in Mo. Bot. Gard. Herb., 54737, 54730); West Fort Ann, *S. H. Burnham*, 15 (in Mo. Bot. Gard. Herb., 44011); Williams Bridge, *P. Wilson*, 3, 31 (in Mo. Bot. Gard. Herb., 54740, 54729); Yonkers, *P. Wilson*, 1 (in Mo. Bot. Gard. Herb., 54727).

New Jersey: *Laning* (in Mo. Bot. Gard. Herb., 5051, 44236, 44238); Alpine, *P. Wilson*, 15, 9, 14, 5, 4 (in Mo. Bot. Gard. Herb., 54733-54736, 54738); Newfield, *J. B. Ellis*, in Ellis, Fungi Col., 307, and in de Thümen, Myc. Univ., 1404; New Brunswick, *H. D. House* (in N. Y. State Mus. Herb. and Mo. Bot. Gard. Herb., 54353).

Pennsylvania: Bear Meadow, *C. R. Orton & A. S. Rhoads*, 13,

- 14 (in Mo. Bot. Gard. Herb., 44090, 44091); Bellefonte, *L. O. Overholts*, 3715 (in Mo. Bot. Gard. Herb., 54996); Kittanning, *D. R. Sumstine*, 3, 9, 12; North Garden, *E. Michener*, 437 (in Mo. Bot. Gard. Herb., 44237); Shingleton Gap, *A. S. Rhoads*, 11 (in Mo. Bot. Gard. Herb., 44089); Spruce Creek, *J. H. Faull*, Univ. Toronto Herb., 313 (in Mo. Bot. Gard. Herb., 44885).
- Delaware: Newark, *H. S. Jackson*, B9.
- Maryland: Cabin John Bridge, *C. L. Shear*, 1045; Cabin John Creek, *A. S. Rhoads*, comm. by *L. O. Overholts* (in Mo. Bot. Gard. Herb., 55069); Chevy Chase, comm. by Mrs. *F. W. Patterson* (in Mo. Bot. Gard. Herb., 43730); Takoma Park, *A. S. Rhoads*, comm. by *L. O. Overholts* (in Mo. Bot. Gard. Herb., 55049), *C. L. Shear*, 1160.
- District of Columbia: Takoma Park, *P. L. Ricker*, 818.
- Virginia: Mt. Vernon, *P. L. Ricker*, 1121 in part.
- North Carolina: *Schweinitz*, type (in Herb. Schweinitz and Herb. Fries); Chapel Hill, *W. C. Coker*, 3802, 2026, 1047, 362, 333 (in Mo. Bot. Gard. Herb., 56657-56661); Salem, *Schweinitz*, the *Thelephora ochroleuca* of Schweinitz, Syn. N. Am. Fungi, 644 (in Herb. Schweinitz).
- South Carolina: *H. W. Ravenel*, in Ravenel, Fungi Car. 2: 30; Clemson College, *P. H. Rolfs*, 1614, 1628; Davidson River, *H. von Schrenk* (in Mo. Bot. Gard. Herb., 42964); Society Hill, *H. W. Ravenel* (in Curtis Herb., 1439, under the name *Stereum plicatum*).
- Georgia: Atlanta, *E. Bartholomew*, 5674 (in Mo. Bot. Gard. Herb., 44217); Glenbrook Ravine, *A. B. Seymour*, from Farlow Herb., J (in Mo. Bot. Gard. Herb., 44649); Thomson, *H. H. Bartlett*, comm. by *W. G. Farlow*.
- Florida: *C. G. Lloyd*, 4851, 4852; Camp Pinchot, *W. H. Long*, 12212 (in Mo. Bot. Gard. Herb., 55143); Daytona, *D. L. James*, comm. by U. S. Dept. Agr. Herb.; Gainesville, *H. W. Ravenel*, in Ravenel, Fungi Am., 117; New Smyrna, *C. G. Lloyd*, 2112.
- Alabama: *Dr. Gates*, probably from the type collection of *Telephora lobata Bertolonii*, from Torrey Herb. (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56295); Auburn, *F. S. Earle*, four specimens in Burt Herb., and two

- others (in Mo. Bot. Gard. Herb., 5107, 56619—the last in N. Y. Bot. Gard. Herb. also); Montgomery Co., *R. P. Burke*, 28 (in Mo. Bot. Gard. Herb., 17856).
- Mississippi: Biloxi, *F. S. Earle*, 29; Hattiesburg, *C. J. Humphrey*, 5451; Jackson, *E. Bartholomew*, 5779, 5797, 5784 (in Mo. Bot. Gard. Herb., 44223–44225) and Bartholomew, Fungi Col., 4689; Laurel, *C. J. Humphrey*, 5430; Ocean Springs, *F. S. Earle*, 177 (in Mo. Bot. Gard. Herb., 5065).
- Louisiana: *A. B. Langlois*, 2906; Alden Bridge, *W. Trelease* (in Mo. Bot. Gard. Herb., 5047); Baton Rouge, *C. J. Humphrey*, 5699 (in Mo. Bot. Gard. Herb., 14102); New Orleans, *E. Bartholomew*, 5764 (in Mo. Bot. Gard. Herb., 5440, 44222), *E. A. Burt*; St. Martinville, *A. B. Langlois*, *bc* (in Burt Herb.), 1101 (in Mo. Bot. Gard. Herb., 5063); Shreveport, *E. Bartholomew*, in Bartholomew, Fungi Col., 4689.
- Ohio: Cincinnati, *A. P. Morgan*, comm. by Lloyd Herb., 2633; College Hill, *C. G. Lloyd*, 1457; Linwood, *C. G. Lloyd*, 02833.
- Indiana: Avilla, *W. H. Rankin* (in Mo. Bot. Gard. Herb., 9183); Crawfordsville, *D. Reddick*, 12; Greencastle, *L. M. Underwood* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56277).
- Illinois: Bowmansville, comm. by Univ. Wis. Herb., 4, and *E. T. & S. A. Harper*, 436; River Forest, *E. T. & S. A. Harper*, 709.
- Kentucky: Bowling Green, *S. F. Price* (in Mo. Bot. Gard. Herb., 5036).
- Tennessee: Elkmont, *C. H. Kauffman*, 58, 61, 63 (in Mo. Bot. Gard. Herb., 16384, 3993, 1678); Nashville, *E. Bartholomew*, 5634 (in Mo. Bot. Gard. Herb., 44214).
- Michigan: Chelsea, *C. H. Kauffman*, 23; New Richmond, *C. H. Kauffman*, 44, 43 (in Mo. Bot. Gard. Herb., 22507, 22856).
- Minnesota: *E. L. Jensen*, 2 (in Mo. Bot. Gard. Herb., 3939).
- Wisconsin: Miss *A. D. Stucki*, Univ. Wis. Herb., 7; Blue Mounds, Miss *A. D. Stucki*, Univ. Wis. Herb., 6; Madison, Miss *A. D. Stucki*, Univ. Wis. Herb., 10.
- Iowa: *E. W. D. Holway*.
- Missouri: *B. M. Duggar*, 568; Bismarck, *L. O. Overholts* (in Mo. Bot. Gard. Herb., 43701); Cox's Switch, *H. von*

- Schrenk* (in Mo. Bot. Gard. Herb., 42892); Creve Coeur, *E. A. Burt* (in Mo. Bot. Gard. Herb., 44757); Columbia, *L. E. Cline*, comm. by B. M. Duggar, A555; Gasconade Co., *W. Trelease* (in Mo. Bot. Gard. Herb., 5128); Meramec, *P. Spaulding* (in Mo. Bot. Gard. Herb., 5019); Neeleyville, *Dewart* (in Mo. Bot. Gard. Herb., 5127, 5130); St. Francis River, *W. Trelease* (in Mo. Bot. Gard. Herb., 5129); St. Louis, *E. A. Burt* (in Mo. Bot. Gard. Herb., 8724, 44757), and *H. von Schrenk* (in Mo. Bot. Gard. Herb., 42873); Williamsville, *B. M. Duggar & H. S. Reed*, 47.
- Arkansas: Arkadelphia, *L. M. Underwood* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56620); Batesville, *E. Bartholomew*, in Bartholomew, Fungi Col., 2881; Cass, *W. H. Long*, 19835 (in Mo. Bot. Gard. Herb., 6384); Womble, *W. H. Long*, 19671, 19649, 19865 (in Mo. Bot. Gard. Herb., 6386, 6385, 8887); Wynne, *W. Trelease* (in Mo. Bot. Gard. Herb., 5039).
- Texas: *H. W. Ravenel*, 40 (in U. S. Dept. Agr. Herb.); Joaquin, *E. Bartholomew*, in Bartholomew, Fungi Col., 4985; Somerville, *H. von Schrenk*, 1.
- Colorado: Tolland, *L. O. Overholts*, 2000 (in Mo. Bot. Gard. Herb., 54872).
- British Columbia: Hastings, *J. Macoun*; Sidney, *J. Macoun*, 14, 382 (in Macoun Herb.) and 56, 72 (in Mo. Bot. Gard. Herb., 5738, 5748).
- Washington: Bellingham, *J. R. Weir*, 543, 547, 593 (in Mo. Bot. Gard. Herb., 18629, 18712, 36745); Metaline Falls, *J. R. Weir*, 5245, 590 (in Mo. Bot. Gard. Herb., 55650, 36744); Seattle, *W. A. Murrill*, 137, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 55736).
- Oregon: Corvallis, *W. A. Murrill*, 892b, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 55719), and *C. E. Owens*, 2033, 2134, 2147 (in Mo. Bot. Gard. Herb., 43873, 44697, 9186).
- California: *R. A. Harper*, 121, 128 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56621, 56622); Palo Alto, *W. A. Murrill & L. S. Abrams*, 1170, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 55710).
- Mexico: Jalapa, *W. A. & E. L. Murrill*, 57, 70, 348, comm. by

N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 23108, 3732, 54475), and *C. L. Smith*, in Smith, Central Am. Fungi, 96, 97; Orizaba, *W. A. & E. L. Murrill*, 799, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54624); Trap. de la Concepcion, *Liebman*, authentic specimen of *Stereum complicatum* (in Herb. Fries).

Porto Rico: Indiera Fria, *N. L. Britton*, *J. F. Cowell & S. Brown*, 4483 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56623).

Jamaica: Abbey Green, *W. Harris*, 1022; Cinchona, *F. S. Earle*, 360, and *W. A. & E. L. Murrill*, 600, both numbers comm. by N. Y. Bot. Gard. Herb.; Hope, *F. S. Earle*, 119, comm. by N. Y. Bot. Gard. Herb.; New Haven Gap, *W. A. & E. L. Murrill*, 770, comm. by N. Y. Bot. Gard. Herb.; Monkey Hill, *W. A. Murrill*, 790, 802, comm. by N. Y. Bot. Gard. Herb.; Rose Hill, *F. S. Earle*, 309, 312, comm. by N. Y. Bot. Gard. Herb.

**48. *S. sericeum*** Schweinitz, Naturforsch. Ges. Leipzig Schrift. **1**: 106. 1822 (in *B. Sterea* of *Thelephora*); Morgan, Cincinnati Soc. Nat. Hist. Jour. **10**: 195. 1888; Sacc. Syll. Fung. **6**: 579. 1888. Plate 5, fig. 49.

*Thelephora striata* Fries, Elenchus Fung. **1**: 178. 1828; Schweinitz, Am. Phil. Soc. Trans. N. S. **4**: 167. 1832.—*Stereum striatum* Fries, Epicr. 548. 1838, but not of p. 551 nor of Hym. Eur. 641. 1874.

Illustrations: Hard, Mushrooms, 456. text f. 383.

Type: not found by me in Herb. Schweinitz although studied by Berkeley & Curtis, Acad. Nat. Sci. Phila. Jour. **3**: 220. 1856.

Fructifications coriaceous, small, very thin and papery, effuso-reflexed, laterally confluent, with reflexed portion divided into small pilei, sometimes orbicular and attached by a central point with margin free all around, the upper side whitish to cartridge-buff, shining, silky, with minute radiate fibrils, the margin entire, thinning to subfimbriate, not complicate; hymenium even, wood-brown when most deeply colored, becoming bleached; in structure 250–300  $\mu$  thick, composed of densely and longitudinally arranged hyaline



Fig. 25.  
*S. sericeum*.  
Spores  $\times 665$ .

hyphae  $3-3\frac{1}{2}$   $\mu$  in diameter; no colored conducting organs, gloeocystidia, nor cystidia present; spores hyaline, even, flattened on one side,  $6-7\frac{1}{2} \times 3-3\frac{1}{2}$   $\mu$ .

Fructifications  $1-1\frac{1}{2}$  cm. in diameter, confluent along limbs 10 cm. and more, the reflexed portion 5–10 mm. broad, 3–10 mm. long.

In swampy woods on under side of dead twigs of *Carpinus caroliniana*, recorded rarely on *Liquidambar* and *Nyssa*. Canada to Louisiana and westward to Missouri and in Mexico. Throughout the year. Infrequent.

*Stereum sericeum* is very appropriately named, for its silvery to pale gray pilei are noteworthy by their silky or satiny luster; they are smaller, thinner, and more flexible than those of *S. rameale* and with innate rather than fibrose-strigose fibrils; these pilei lack the ruddy and ochraceous hues characteristic of *S. rameale*; furthermore the pilei of *S. sericeum* are plane, while those of *S. rameale* are folded laterally or crisped. Nevertheless I have received some scanty specimens of *S. rameale* from the West and South which were sparsely developed and bleached out so as to simulate *S. sericeum*. In New England and New York, *S. sericeum* has been invariably on *Carpinus caroliniana* when the substratum has been recorded, but elsewhere *S. rameale* has sometimes been recorded on other substrata.

The concept of *S. sericeum* is that held by all American mycologists and is in conformity with the specimens in Curtis Herbarium determined by Berkeley and Curtis who studied the authentic specimen.

Specimens examined:

Exsiccati: Ellis, N. Am. Fung., 19; Ell. & Ev., Fungi Col., 705; Ravenel, Fungi Car. 1: 21; Shear, N. Y. Fungi, 312.

Ontario: London, J. Dearnness; Ottawa, J. Macoun, 20, 30, 277; Toronto, G. H. Graham, Univ. Toronto Herb., 675 (in Mo. Bot. Gard. Herb., 44918), and T. Langton, Univ. Toronto Herb., 518, 594 (in Mo. Bot. Gard. Herb., 44842, 44848).

Vermont: Middlebury, E. A. Burt, five collections.

Massachusetts: Wayland, A. B. Seymour, T23 (in Mo. Bot. Gard. Herb., 22097).

Connecticut: Goshen, L. M. Underwood, 224 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56658).

New York: *Sartwell* (in Mo. Bot. Gard. Herb., 5045); Alcove, *C. L. Shear*, 1047, 1124, 1211, 1314, 1325, 1332, and in *Shear*, N. Y. Fungi, 312; Glasco, *P. Wilson*, 36 (in Mo. Bot. Gard. Herb., 54744); Grand View, *H. von Schrenk* (in Mo. Bot. Gard. Herb., 42795); Ithaca, *G. F. Atkinson*, 178 O. S., 2827, 22968, and *W. C. Muenscher*, 4 (in Mo. Bot. Gard. Herb., 56594); McLean, *W. C. Muenscher*, 98 (in Mo. Bot. Gard. Herb., 56596); Taughannock Gorge, *W. C. Muenscher*, 199 (in Mo. Bot. Gard. Herb., 56595).

New Jersey: Newfield, *J. B. Ellis*, in *Ellis*, N. Am. Fungi, 19, *Ell. & Ev.*, Fungi Col., 705, and (in Mo. Bot. Gard. Herb., 5103).

Pennsylvania: *E. Michener*, 399 (in Mo. Bot. Gard. Herb., 5104); State College, *L. O. Overholts*, 3054 (in Mo. Bot. Gard. Herb., 5688).

District of Columbia: Takoma Park, *C. L. Shear*, 957.

North Carolina: Chapel Hill, *W. C. Coker*, 1043 (in Mo. Bot. Gard. Herb., 56668).

South Carolina: Black Oak, *H. W. Ravenel*, in *Ravenel*, Fungi Car. 1: 31.

Florida: Tallahassee, comm. by *W. G. Farlow*.

Alabama: Auburn, *F. S. Earle* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56661–56663); Fayette Co., *P. V. Diggers*, comm. by *A. H. W. Povah*, 17 (in Mo. Bot. Gard. Herb., 20803); Montgomery Co., *R. P. Burke*, 32, 137 (in Mo. Bot. Gard. Herb., 15929, 10934); Tuskegee, *C. W. Carver*, 369 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56664).

Mississippi: Biloxi, *F. S. Earle*, 27.

Louisiana: New Orleans, *F. S. Earle* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56660).

Ohio: Cleveland, *H. C. Beardslee*; Columbus, *W. A. Kellerman*, in *Kellerman*, Ohio Fungi, 139 (in Mo. Bot. Gard. Herb., 5042); Norwood, *C. G. Lloyd*, 2270; Oberlin, and also Penfield, *F. D. Kelsey* (in Mo. Bot. Gard. Herb., 56665 and 56666 respectively).

Indiana: Scottsburg, *J. R. Weir*, 5803 (in Mo. Bot. Gard. Herb., 55643).

Michigan: Agricultural College, *Hicks*, comm. by *W. G. Farlow*.

Missouri: Columbia, *B. M. Duggar*, 553.

Mexico: Jalapa, W. A. & E. L. Merrill, 343 in part, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 56672).

49. *S. pubescens* Burt, n. sp. Plate 5, fig. 50.

Type: in Mo. Bot. Gard. Herb., N. Y. Bot. Gard. Herb., and Burt. Herb.

Fructification coriaceous, thin, orbicular, conchate-reflexed, attached by one side and the center, reflexed all around but more broadly on the upper side, white, pubescent with soft matted hairs, not zonate nor sulcate; hymenium drying even or somewhat radiately rugose, sorghum-brown to dusky drab, shining; in structure 600  $\mu$  thick exclusive of the tomentum, with the occasional hymenial wrinkles standing out up to 120  $\mu$  further; intermediate layer bordered next to the tomentum by a narrow, dense, colored zone and composed of longitudinally arranged and somewhat loosely interwoven hyaline, thick-walled hyphae  $3\frac{1}{2}$   $\mu$  in diameter; no vesicular organs, conducting organs, gloeocystidia, nor cystidia present; hymenium composed of a single layer of simple basidia with 4 sterigmata; spores hyaline, even, oval,  $6 \times 4$   $\mu$ .

Fructifications 3–10 mm. in diameter, reflexed 1–3 mm.

On dead limbs of a frondose species. Montana. April. Probably rare.

*S. pubescens* has small fructifications with some resemblance in aspect to those of *Cenangium furfuraceum* but white and pubescent with soft matted hairs. Specimens from this gathering were communicated by Ellis, No. 7014, to Cooke and were regarded by Cooke as a young *Stereum*, related to *Stereum purpureum* and, perhaps, young specimens of this species. *S. pubescens* differs sharply from *S. purpureum* in having no pyriform, vesicular organs. The specimens are so mature that many basidia bearing sterigmata are present and occasionally spores. In the smaller specimens the hymenium is even but in those 1 cm. in diameter some broad, obtuse, radiating wrinkles are present, which may necessitate the transfer of this species from *Stereum* when better known from future collections.

Specimens examined:

Montana: Sheridan, Mrs. L. A. Fitch, in Ellis Collection, 7014, type (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56784).

**50. *S. conicum*** Burt, n. sp. Plate 5, fig. 51.

Type: in Farlow Herb. and in Mo. Bot. Gard. Herb.

Pileus coriaceous, small, rather thick, conical, sessile, attached by the vertex, villose, with some specimens whitish to pale olive-buff and others between wood-brown and Sayal-brown; intermediate layer not bordered by a dark zone, nearly colorless, containing many thick-walled and somewhat incrustated hyphal ends  $15-25 \times 6 \mu$  but no colored conducting organs; hymenium even, drab, without cystidia; spores hyaline, even,  $4-4\frac{1}{2} \times 2\frac{1}{2} \mu$ .

Pileus 2-4 mm. in diameter, 2-4 mm. high, about  $\frac{2}{5}-\frac{1}{2}$  mm. thick.

Singly on small, dead, frondose twigs. Cuba.

If carelessly glanced at, specimens of this species might be referred to *S. ochraceo-flavum*, but in *S. conicum* each of the eight fructifications which I have seen is truly conical, pendant, and attached by its vertex, while the pilei of *S. ochraceo-flavum*, *S. ochroleucum*, etc., are reflexed; the hymenium of *S. conicum* is glabrous, while that of *S. ochraceo-flavum* contains even-walled, non-incrustated cystidia  $20-25 \times 4-6 \mu$ , protruding  $15 \mu$ . *S. conicum* is noteworthy by the very numerous thick-walled and somewhat incrustated hyphal ends which are present in its intermediate layer. On the hymenial side these bodies curve towards the hymenium but do not reach its surface; on the opposite side they curve to the upper surface of the pileus and protrude as incrustated hairs forming a part of the villose covering of the pileus, a structural feature suggestive of *Cyphella*. The specimens of *S. conicum* were collected by Charles Wright during his last trip to Cuba in about 1860 but were not sent to Berkeley and Curtis for study.

Specimens examined:

Cuba: Fungi Cubensis Wrightiani, 842, *C. Wright*, type, comm. by W. G. Farlow (in Mo. Bot. Gard. Herb., 43906 and in Farlow Herb.).

**51. *S. vibrans*** Berk. & Curtis, Linn. Soc. Bot. Jour. 10: 332. 1868; Sacc. Syll. Fung. 6: 577. 1888. Plate 5, fig. 52.

An *Stereum cupulatum* Patouillard in Duss, Fl. Crypt. Antilles Fr. 233. 1904?

Type: in Curtis Herb. and Kew Herb.

Fructifications coriaceous, orbicular, and attached by the center, or fan-shaped and laterally confluent, lobed, the upper surface velvety hirsute on the region of recent growth, becoming somewhat glabrous in the older region near place of attachment, narrowly concentrically sulcate, somewhat zonate, snuff-brown, becoming Saccardo's umber; hymenium even, Saccardo's umber to drab, somewhat pruinose; in structure 600–800  $\mu$  thick, with the intermediate layer connected with the hairy covering by a blackish dense crust; hyphae of intermediate layer snuff-brown, blackening by action of dilute potassium hydrate, longitudinally arranged, thick-walled,  $3\frac{1}{2}$ –4  $\mu$  in diameter; hymenial layer simple; no colored conducting organs, cystidia, nor aculeate paraphyses; spores hyaline, even,  $4\text{--}5 \times 2\frac{1}{2}\text{--}3$   $\mu$ .

Pileus 2–5 cm. in diameter.

On logs. Cuba and Jamaica. October and November. Rare.

*S. vibrans* is related to *S. crassum* but seems distinct by having smaller spores and a thin, blackish, horn-like crust under the hairy covering; the other histological details are very similar however. *S. vibrans* may be distinguished from the other species of the West Indies by its tobacco color, pruinose hymenium, and lack of cystidia, gloeocystidia, conducting organs, and bottle-brush paraphyses. *S. papyrinum* is of similar coloration, but is more spongy, has incrusted cystidia, and does not have its intermediate layer bordered above by a crust.

Specimens examined:

Cuba: *C. Wright*, 530, type (in Curtis Herb.).

Jamaica: Rose Hill, *F. S. Earle*, 299, 303, comm. by N. Y. Bot. Gard. Herb.

**52. *S. crassum*** Fries, R. Soc. Sci. Upsal. Actis III. 1: 111. 1851 (not *Thelephora crassa* Lévillé); Sacc. Syll. Fung. 6: 582. 1888.

Type: in Herb. Fries.

Fructification coriaceous, resupinate, effused, sometimes reflexed, villose, blackening, the margin obtuse, determinate, paler; hymenium even, dark chestnut-brown; in structure 1000  $\mu$  thick, with intermediate layer not bordered by a darker denser zone or crust, composed of longitudinally and rather loosely

arranged, dark-colored, thick-walled, stiff hyphae  $3\frac{1}{2}$ – $4\frac{1}{2}$   $\mu$  in diameter, not incrusted, which give their color to the fructification; no colored conducting organs, gloeocystidia, nor cystidia; spores hyaline,  $9 \times 4$   $\mu$ .

According to the original collection of *S. crassum* in Herb. Fries, this is a very distinct species, characterized by very dark color throughout and by absence of colored conducting organs, cystidia, and gloeocystidia. It is probably of local distribution, for I have seen but one collection which is even doubtfully referable to *S. crassum*. This specimen, collected at Motzorongo, is wholly resupinate, with hyphae dark-colored and ascending obliquely from the substratum instead of running longitudinally, and the hymenium has dried pinkish buff.

Specimens examined:

Mexico: Mirador, *Liebman*, type (in Herb. Fries); Motzorongo, near Cordoba, *W. A. & E. L. Murrill*, 985 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 54648).

**53. *S. radiatum*** Peck, Buffalo Soc. Nat. Hist. Bul. 1: 62. 1873; N. Y. State Mus. Rept. 26: 72. 1874; Sacc. Syll. Fung. 6: 571. 1888; Masee, Linn. Soc. Bot. Jour. 27: 195. 1890.

Plate 5, fig. 53.

*S. radiatum* var. *reflexum* Peck, N. Y. State Mus. Rept. 49: 45. 1896; Sacc. Syll. Fung. 14: 217. 1900.—An *Thelephora* (*Stereum*) *corrugata* Léveillé, Ann. Sci. Nat. Bot. III. 5: 150. 1846?

Type: in N. Y. State Mus. Herb.

Fructification coriaceous, resupinate, with the margin free all around, sometimes reflexed on the upper side, the reflexed portion becoming black above, velutinous, crisped, and somewhat lobed; hymenium uneven, not polished, marked with thick ridges radiating from the center, Sudan-brown, rarely black when turned upward and exposed to direct sunlight and weather; in structure 1000  $\mu$  thick, composed of densely and longitudinally arranged, colored hyphae  $3\frac{1}{2}$ –4  $\mu$  in diameter, whose color is dissolved by dilute potassium hydrate solution; no cystidia; spores from spore collections white, even, slightly curved,  $9$ – $10 \times 3\frac{1}{2}$ –4  $\mu$ .



Fig. 26. *S. radiatum*.  
Spores  $\times 665$ .

Fructifications 2 cm. in diameter up to  $10 \times 3$  cm.; reflexed portion 2–8 mm. broad.

Under side of hemlock, spruce, and pine boards and logs and charred wood. Canada to Pennsylvania and westward to Montana; received also from Russia where growing on rotten wood in greenhouse.

*S. radiatum* is readily recognized by its bright, ferruginous hymenium with shallow broad ridges radiating from the center to the margin, and by the black upper side of the pileus when reflexed. The general aspect, coloration, and color changes with KHO solution are suggestive of some species of *Hymenochaete* but no setae are present. I endeavored to have comparison made with the type of *Thelephora corrugata* in Museum of Paris Herbarium but Patouillard could not find the specimen there.

Specimens examined:

Exsiccati: Ellis, N. Am. Fungi, 407.

Russia: on rotting wood in a greenhouse, *Janczewsky* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 6173).

Ontario: Harraby, *E. T. & S. A. Harper*, 636.

Vermont: *Howe* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 5962); Lake Willoughby, *W. G. Farlow*; Middlebury, *E. A. Burt*, four collections.

Massachusetts: Cambridge, *W. G. Farlow*; Sharon, *A. P. D. Piguet*, comm. by *W. G. Farlow*, O (in Mo. Bot. Gard. Herb., 55002).

New York: Albany, *C. H. Peck*, in Ellis, N. Am. Fungi, 407; Alcove, *C. L. Shear*, 1301; Freeville, *G. F. Atkinson*, Cornell Univ. Herb., 18185; Ithaca, *C. O. Smith*, *H. H. Whetzel*, *L. M. Wiegand*, Cornell Univ. Herb., 8029, 13809, and 3254 respectively.

Pennsylvania: State College, *L. O. Overholts*, 2653 (in Mo. Bot. Gard. Herb., 5917); Trexlertown, *W. Herbst*.

Michigan: Seney, *C. J. Humphrey*, 1843 (in Mo. Bot. Gard. Herb., 17766).

Montana: Darby, *J. R. Weir*, 363 (in Mo. Bot. Gard. Herb., 16472).

**54. *S. patelliforme* Burt, n. sp.**  
Type: In Burt Herb.

Plate 5, fig. 54.

Fructification coriaceous-fleshy, resupinate, the margin becoming free or narrowly reflexed, hoary with a few short hairs, drying cinnamon to bone-brown, the margin entire; hymenium even, waxy, cracking in drying, drying cinnamon to bone-brown; in structure 500–800  $\mu$  thick, composed of longitudinally and densely arranged, hyaline hyphae 3–3½  $\mu$  in diameter, with the intermediate layer not bordered on the upper side by a denser, darker zone; hair-like cystidia hyaline, cylindric, flexuous, 50–60  $\times$  5–6  $\mu$ , emerging up to 40  $\mu$ , but rarely present; basidia simple, with 4 sterigmata, often protruded; spores hyaline, even, 9–10  $\times$  3–4  $\mu$ , somewhat curved.

Fructifications 3  $\times$  2 mm., up to 25  $\times$  3 mm., the margin free all around and rolled up 1–2 mm.

On fallen branches of *Acer*, *Quercus*, and other frondose species. Washington, California, and New Mexico. August to April. Rare.

*S. patelliforme* differs from our other *Stereums* by being of more fleshy consistency and with a waxy hymenium. In these characters it approaches *Corticium*, but it has the longitudinal arrangement of hyphae characteristic of *Stereum* and the margin becomes narrowly reflexed. These characters separate *S. patelliforme* from our other *Stereums* with the exception of *S. pubescens*, which is snow-white on the upper side with a thick covering of fine soft hairs, is more broadly reflexed, and has a somewhat radiately rugose hymenium.

Specimens examined:

Washington: Bingen, *W. N. Suksdorf*, 713, type, 752, 753, 884, 917.

California: Campo Mts., *C. D. Orcutt*, 2005, comm. by U. S. Dept. Agr. Herb.

New Mexico: Ute Park, Colfax Co., *P. C. Standley*, 14735, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 44951).

**55. *S. ochraceo-flavum*** Schweinitz in Peck, N. Y. State Mus. Rept. 22: 86. 1869; Morgan, Cincinnati Soc. Nat. Hist. Jour. 10: 195. 1888; Sacc. Syll. Fung. 6: 576. 1888; Masee, Linn. Soc. Bot. Jour. 27: 184. 1890. Plate 5, fig. 55.

*Thelephora ochraceo-flava* Schweinitz, Am. Phil. Soc. Trans. N. S. 4: 167. 1832.

Type: in Herb. Schweinitz and Curtis Herb.

Fructification coriaceous, thin, small, effuso-reflexed, sometimes confluent along branches, often conical and attached by

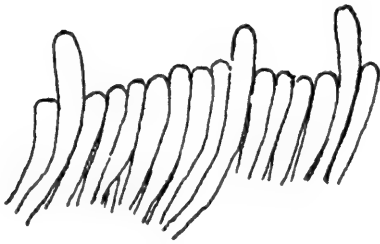


Fig. 27. *S. ochraceo-flavum*.  
Hymenium showing three cystidia,  $\times 488$ .

one side and the umbo and sometimes only by the umbo, the upper side villose-tomentose, somewhat furrowed, white, weathering gray; in structure 200–300  $\mu$  thick below the hairy covering, with intermediate layer becoming bordered on the upper side by a denser or colored zone when old and weathered, composed of densely and longitudinally arranged, hyaline hyphae 3–4  $\mu$  in

diameter; no colored conducting organs; hymenium even, “yellow,” becoming cream-buff in the herbarium; cystidia not incrusted, obtuse,  $20\text{--}25 \times 4\text{--}6 \mu$ , protruding up to 15  $\mu$ ; spores not found.

Reflexed portion 3–5 mm. broad, and about as long; scattered conical pilei 3–5 mm. in diameter.

On dead branches of frondose species. Canada to Mississippi and westward to Missouri, and in California and Mexico. July to May.

*S. ochraceo-flavum* may be recognized at sight by its small, white, conical fructifications heavily clothed with long, soft hairs and by its bright yellow hymenium. The non-incrusted cystidia afford a good distinctive microscopical character for separation of this species from very small specimens of *S. sulphuratum*. In specimens which have persisted beyond their normal season of active growth, the upper side of the intermediate layer becomes hardened and pale golden.

Specimens examined:

Exsiccati: Ellis, N. Am. Fungi, 17; Ell. & Ev., Fungi Col., 6; Ravenel, Fungi Am., 787; Ravenel, Fungi Car. 2: 31; de Thümen, Myc. Univ., 10.

Ontario: Ottawa, J. Macoun, 242.

Vermont: Middlebury, E. A. Burt.

Massachusetts: D. W. Weis, comm. by C. G. Lloyd, 145 (in Mo. Bot. Gard. Herb., 56687); Cambridge, E. A. Burt; Magnolia, W. G. Farlow.

- Connecticut: Storrs, *A. E. Moss*, comm. by P. W. Graff, 38 (in Mo. Bot. Gard. Herb., 44792).
- New York: Albany, *H. D. House* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55209); East Galway, *E. A. Burt*; Ithaca, Cornell Univ. Herb., 219; Poughkeepsie, *W. R. Gerard*, 228, 261 (in N. Y. Bot. Gard. Herb.); Staten Island, *L. M. Underwood* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56701).
- New Jersey: Newfield, *J. B. Ellis*, in Ellis, N. Am. Fungi, 17, Ell. & Ev., Fungi Col., 6, and de Thümen, Myc. Univ., 10.
- Pennsylvania: Bethlehem, *Schweinitz*, type (in Herb. Schweinitz and in Curtis Herb.); State College, *J. F. Adams*, 8 (in Mo. Bot. Gard. Herb., 44085).
- Maryland: Seven Locks, *P. L. Ricker*, 1005; Takoma Park, *C. L. Shear*, 1119, 1240.
- Virginia: Park Lane, *W. H. Long*, 18463 (in Mo. Bot. Gard. Herb., 55101).
- North Carolina: Blowing Rock, *G. F. Atkinson*, 4316.
- South Carolina: *H. W. Ravenel*, in Ravenel, Fungi Car. 2: 31; Summerville, *C. L. Shear*, 1228.
- Georgia: Darien, *H. W. Ravenel*, in Ravenel, Fungi Am., 787; Fullerton, *P. L. Ricker*, 918.
- Florida: *C. G. Lloyd*, 4859; Hanosassa (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56688); New Smyrna, *C. G. Lloyd*, 2089; Tampa, *N. L. & E. G. Britton & J. A. Shafer*, 46 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56689).
- Alabama: Auburn, *F. S. Earle & C. F. Baker* (in Burt Herb. and Mo. Bot. Gard. Herb., 5089); Montgomery Co., *R. P. Burke*, 22 (in Mo. Bot. Gard. Herb., 12291).
- Mississippi: Ocean Springs, *F. S. Earle*, 180 (in Mo. Bot. Gard. Herb., 5090).
- Michigan: New Richmond, *C. H. Kauffman*, 87 (in Mo. Bot. Gard. Herb., 44995).
- Wisconsin: Palmyra, *Miss A. O. Stucki*, Univ. Wis. Herb., 40.
- Indiana: Millers, *E. T. & S. A. Harper*, 938.
- Tennessee: Elkmont, *C. H. Kauffman*, 59 (in Mo. Bot. Gard. Herb., 44971).
- Iowa: Decorah, *E. W. D. Holway*.

Missouri: Allenton, *Letterman*, 48 (in Mo. Bot. Gard. Herb., 5041).

Arkansas: Cass, *W. H. Long*, 19833 (in Mo. Bot. Gard. Herb., 17807).

California: Campo Seco, *W. H. Thomas*, 3 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 86690).

Mexico: Jalapa, *W. A. & E. L. Murrill*, 347, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54468); Orizaba, *J. G. Smith*, 511 (in Mo. Bot. Gard. Herb., 437).

**56. *S. abietinum*** Persoon, *Myc. Eur.* 1: 122. 1822 (under \*\*\*\* *Stereum* of *Thelephora*); Fries, *Obs. Myc.* 1: 274. 1815, and ed. 2, 1824; *Epicr.* 552. 1838; *Hym. Eur.* 643. 1874; *Sacc. Syll. Fung.* 6: 574. 1888. Plate 5, fig. 56.

*Thelephora abietina* Persoon, *Syn. Fung.* 573. 1801; Fries, *Syst. Myc.* 1: 442. 1821.—*Hymenochaete abietina* (Pers.) Masee, *Linn. Soc. Bot. Jour.* 27: 115. 1890.—*Thelephora striata* Schrader, *Spic. Fl. Germ.* 186. 1794.—*Stereum striatum* Schrader ex Fries, *Epicr.* 551. 1838; *Hym. Eur.* 641. 1874; *Sacc. Syll. Fung.* 6: 565. 1888.—*Lloydella striata* (Schrader) Bresadola in Lloyd, *Myc. Writ.* 1. *Myc. Notes* 6: 51. 1901.—*Stereum glaucescens* Fries, *Hym. Eur.* 644. 1874; *Sacc. Syll. Fung.* 6: 575. 1888.—*Hymenochaete fimbriata* Ellis & Everhart, *Jour. Myc.* 1: 149. 1885; *Sacc. Syll. Fung.* 6: 599. 1888; Masee, *Linn. Soc. Bot. Jour.* 27: 113. 1890.—*Hymenochaete abnormis* Peck, *N. Y. State Mus. Rept.* 42: 126. *pl. 1. f. 13-16.* 1889; *Sacc. Syll. Fung.* 9: 227. 1891.

Illustrations: Istvanffi, *Jahrb. f. wiss. Bot.* 29: *pl. 5. f. 16, 17*; Patouillard, *Essai Tax. Hym.* 72; Peck, *N. Y. State Mus. Rept.* 42: *pl. 1. f. 13-16.*

Fructification coriaceous-spongy, dry, thick, resupinate, effused, rarely reflexed, with upper side tomentose, obscurely zonate, burnt umber, tuberculate or uneven; hymenium varying from light drab to cinereous or glaucous; in structure 400–900  $\mu$  thick, of which the intermediate layer and the hymenium together constitute 300–600  $\mu$ ; intermediate layer composed of longitudinally arranged and interwoven colored hyphae 3–3½  $\mu$  in diameter and bordered on its outer side by a darker, denser zone which connects it with the tomentose covering; hymenial

layer becoming zonate and containing numerous colored cystidia having more or less the appearance of colored conducting organs; cystidia colored, cylindric, obtuse, even, rough-walled or more or less incrusted,  $90-150 \times 6-8 \mu$ , protruding up to  $60 \mu$ ; spores hyaline, even, flattened on one side,  $9-13 \times 4-5 \mu$ .

Resupinate specimens  $2-8 \times 2-5$  cm., reflexed margin 3-8 mm. broad.

On wood and logs of *Abies* and *Pinus*. New Hampshire to Washington and in Europe. June to October. Rare.

*S. abietinum* usually occurs resupinate, but its thick, separable, felty fructifications are suggestive of a resupinate *Stereum*, and this view is confirmed by the presence of the intermediate layer when radial, vertical sections are examined. The cinereous, pruinose surface of the hymenium due, however, to whitish, cobwebby filaments rather than powdery grains, is highly characteristic and shared only by the western *S. rugisporum*, as are also the colored cylindric cystidia. *S. rugisporum* is separated by its odor of anise, much thicker and more broadly reflexed pilei, and presence in occasional collections of colored spores imbedded in the deeper zones of the hymenium.

I have included *Hymenochaete fimbriata* among the synonyms of *S. abietinum*, but it may prove to belong with *S. rugisporum* instead.

Specimens examined:

Exsiccati: de Thümen, Myc. Univ., 1107.

Norway: Christiania, M. N. Blytt, type of *Stereum glaucescens* (in Herb. Fries).

Sweden: Stockholm, L. Romell, 29; Upsala, C. G. Lloyd, 08521 (in Lloyd Herb. and Mo. Bot. Gard. Herb., 55497).

Finland: Mustiala, P. A. Karsten, in de Thümen, Myc. Univ., 1107.

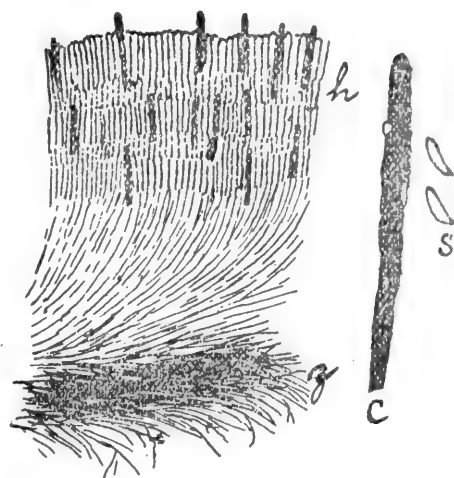


Fig. 28. *S. abietinum*. Section  $\times 68$ ; crust-like zone, z; hymenium containing colored cystidia, h; cystidium, c, and spores, s,  $\times 488$ .

Italy (?): locality not stated, *G. Bresadola*.

New Hampshire: Crawford Notch, *L. O. Overholts* & *A. S. Rhoads* (in Mo. Bot. Gard. Herb., 56342); North Conway, *L. O. Overholts*, 4553 (in Mo. Bot. Gard. Herb., 55633).

Vermont: Smugglers Notch, Mt. Mansfield, *E. A. Burt*.

New York: Cascadeville, Adirondack Mts., *C. H. Peck*, type of *Hymenochaete abnormis* (in N. Y. State Mus. Herb.).

Wisconsin: Madison, *M. C. Jensen*, comm. by *C. J. Humphrey*, 618.

Montana: Yellowstone Park, part of type of *Hymenochaete fimbriata* from *J. B. Ellis* (in Kew Herb.).

Canada: Rocky Mts., Lake O'Hara, *J. Macoun*, 2.

Washington: Mt. Paddo, *W. N. Suksdorf*, 731.

**57. *S. rugisporum* (Ell. & Ev.) Burt, n. comb.**

Plate 6, fig. 58.

*Hymenochaete rugispora* Ellis & Everhart, Acad. Nat. Sci. Phila. Proc. 1890: 219. 1890; Sacc. Syll. Fung. 9: 228. 1891.

Type: in N. Y. Bot. Gard. Herb.

Fructification coriaceous-spongy, dry, thick, effuso-reflexed, finally umbonate along line of attachment to substratum, the upper side tomentose, concentrically sulcate, snuff-brown when young and remaining so on the obtuse margin, elsewhere weathering neutral gray, with an anise-like odor in the herbarium; hymenium even, light mouse-gray, becoming light drab; in structure 2–3 mm. thick, with intermediate layer and hymenium together 800–1200  $\mu$  thick and the intermediate layer connected with the loosely interwoven tomentose surface layer by a dark dense zone, the hyphae of the intermediate layer colored, 2–4  $\mu$  in diameter, longitudinally arranged and loosely interwoven, curving outward into the hymenial layer; hymenial layer becoming up to 1000  $\mu$  thick, zonate, containing colored cystidia and sometimes colored spores  $7\frac{1}{2}$ –9  $\times$  3–3 $\frac{1}{2}$   $\mu$ , even or rough-walled; cystidia colored, cylindric, obtuse, even, rough or granule-incrusted, 100–150  $\times$  7–9  $\mu$ , pro-

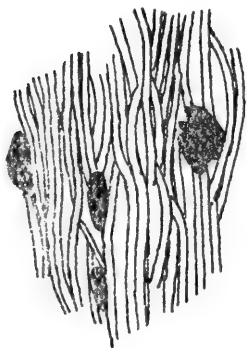


Fig. 29. *S. rugisporum*. Portion of section  $\times$  488, showing colored imbedded spores.

truding up to  $120\ \mu$ , starting from all parts of the hymenial layer and subhymenium; basidiospores as seen on basidia, hyaline, even,  $9-13 \times 3-4\frac{1}{2}\ \mu$ , borne 4 to a basidium.

Reflexed portions 1-4 cm. long and wide, sometimes laterally confluent for 6-8 cm.; resupinate parts of about the same dimensions.

On dead *Abies*, *Picea*, *Pinus*, and *Larix*. In Rocky Mt. states and British Columbia to Arizona. July to September.

Reflexed specimens of *S. rugisporum* may be recognized by their thick, felty, or spongy pilei, deeply concentrically sulcate, and snuff-brown or partly gray in color, with a whitish, pruinose hymenium, and an odor of anise; collections so far made indicate that this species is restricted to conifers of mountainous regions. Microscopic examination of sections shows characteristic cylindric, colored cystidia, which in the subhymenium and the deeper zones of the hymenium are not readily distinguishable from such colored conducting organs as occur in many species of *Stereum*. There is, however, no record of bleeding from wounds of the hymenium of *S. rugisporum* and *S. abietinum*. The type specimen of *S. rugisporum* contains colored spores, usually even, but occasionally rough-walled, imbedded in the deeper zones of the hymenium; similar spores occur in some, but not all, of the collections cited below, but the collections are so similar in other characters that I regard these colored imbedded spores as an important, occasional character of the species, which will positively identify some collections.

The type of *Hymenochaete fimbriata* was collected in Yellowstone Park, Montana, on *Pinus Murrayana*; the specimen is wholly resupinate and does not show colored, imbedded spores in the preparations which I preserved. I regarded this specimen as not specifically distinct from *S. abietinum*, but the type station of *H. fimbriata* makes me uncertain as to whether the latter may not yet be demonstrated to be resupinate *S. rugisporum* instead. When so demonstrated, the specific name *fimbriatum* should be used for the species because of earlier publication.

Specimens examined:

Wyoming: Fox Park, *J. R. Weir*, 10009 (in Mo. Bot. Gard. Herb., 55788).

- Colorado: Silverton, *E. R. Hodson*, comm. by C. J. Humphrey, 1551; Tolland, *L. O. Overholts*, 1781, 2336 (in Mo. Bot. Gard. Herb., 56042, 56761); Yankee Doodle Lake, *F. J. Seaver & E. Bethel* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56729).
- Idaho: Bonanza, *G. G. Hedgcock*, comm. by C. J. Humphrey, 2168 (in Mo. Bot. Gard. Herb., 10377); Coolin, *J. R. Weir*, 11476 (in Mo. Bot. Gard. Herb., 56724); Leesburg, *F. S. Wolpert*, comm. by J. R. Weir, 7033 (in Mo. Bot. Gard. Herb., 55463); Priest River, *E. E. Hubert*, comm. by J. R. Weir, 11655 (in Mo. Bot. Gard. Herb., 56725).
- British Columbia: *J. Macoun*, 94, type (in N. Y. Bot. Gard. Herb.).
- Washington: Olympic Mts., *T. C. Frye*, 1 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56730); Seattle, *W. A. Murrill*, 130, 146 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56731, 56732) and *J. M. Grant*, 2066, comm. by C. G. Lloyd (in N. Y. Bot. Gard. Herb., 56728).
- Arizona: Agassiz, *W. H. Long*, 19445 (in Mo. Bot. Gard. Herb., 44734); Mt. Humphrey, Flagstaff, *W. H. Long*, 21306–21308, 21310 (in Mo. Bot. Gard. Herb., 54897–54899, 54901); Interior Basin, San Francisco Peaks, *W. H. Long*, 21309, 21311 (in Mo. Bot. Gard. Herb., 54900, 54902).

**58. *S. ambiguum*** Peck, N. Y. State Mus. Rept. 47: 145. 1894; Sacc. Syll. Fung. 11: 122. 1895. Plate 5, fig. 57.  
Type: in N. Y. State Mus. Herb.

Fructifications coriaceous, dry, resupinate, effused, rarely narrowly reflexed, with the upper side tomentose, Prout's brown, the resupinate margin often brighter colored, antique brown, determinate; hymenium velvety, raw umber to Saccardo's umber when mature and thick, becoming deeply cracked in drying; in structure 600–1400  $\mu$  thick, with an intermediate layer 400–600  $\mu$  broad, composed of longitudinally interwoven, colored hyphae 3–4  $\mu$  in diameter, and with a zonate hymenial layer up to 800  $\mu$  thick containing colored incrustated cystidia in all the zones; sections darkened by KHO solution; cystidia colored, cylindric, obtuse, usually incrustated, 100–150 $\times$ 7–12  $\mu$ , protruding up to 100  $\mu$ ; basidiospores white in spore collection,

even,  $10-13 \times 3\frac{1}{2}-4\frac{1}{2} \mu$ ; colored spores  $12 \times 3\frac{1}{2}-4 \mu$  sometimes occur in deeper zones of the hymenium.

Resupinate part 1-8 cm. long, 1-4 cm. wide, reflexed part 1-5 mm. broad in the only reflexed specimen known.

On logs of *Abies* and, perhaps, *Pinus Strobus*. Vermont and New York. June to November. Very rare.

*S. ambiguum* belongs in the group of species with *S. abietinum* and *S. rugisporum* on account of similarity in microscopic structure including the colored cystidia. It may be separated from both these species at sight by the color of its hymenium which is permanently umber and not at all cinereous nor glaucous. There is a difference in chemical composition also, for dilute potassic hydrate solution blackens the sections and becomes itself discolored as in the case of species of *Hymenochaete*. In fact, the general aspect of resupinate, thick, mature, deeply cracked specimens is very like that of *Hymenochaete spreata*—a species which occurs only exceptionally on a coniferous substratum. It is possible that *S. ambiguum* occurs in reflexed form in the state of Washington, for the collection cited under *S. rugisporum*, Olympic Mts., *T. C. Frye*, 1, resembles *S. ambiguum* but is not quite in perfect enough condition for confident reference here.

Specimens examined:

Vermont: Middlebury, *C. G. Lloyd*, 10652 (in Lloyd Herb. and Mo. Bot. Gard. Herb., 44585); Ripton, *E. A. Burt*; Smugglers Notch, Mt. Mansfield, *E. A. Burt*.

New York: Adirondack Mts., *C. H. Peck*, type (in N. Y. State Mus. Herb.); Averyville, *C. H. Peck* (in N. Y. State Mus. Herb. and Mo. Bot. Gard. Herb., 55699).

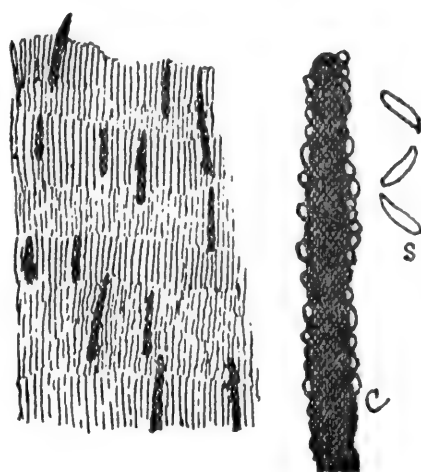


Fig. 30. *S. ambiguum*. Section of hymenial region  $\times 68$ ; peripheral part of cystidium, *c*, and spores, *s*,  $\times 650$ .

**59. *S. umbrinum*** Berk. & Curtis, *Grevillea* 1: 164. 1873; Wakefield, *Kew Bul.* 1915: 369. 1915.—Compare *Stereum umbri-*

*num* Fries in Lehmann, *Plantae Preissianae* 2: 137. 1847.  
Plate 6, fig. 59.

*Thelephora crassa* Lévillé in Gaudichaud, *Voyage Bonite Bot.* 1: 190. *pl.* 139. *f.* 1. 1846. Not *Stereum crassum* Fries, R. Soc. Sci. Upsal. Actis III. 1: 111. 1851.—*Hymenochaete crassa* (Lév.) Berkeley in Cooke, *Grevillea* 8: 148. 1880; Sacc. Syll. Fung. 6: 597. 1888; Masee, Linn. Soc. Bot. Jour. 27: 114. 1890.—*H. umbrina* Berk. & Curtis in Cooke, *Grevillea* 8: 148. 1880; Morgan, *Cincinnati Soc. Nat. Hist. Jour.* 10: 198. 1888; Sacc. Syll. Fung. 6: 598. 1888; Masee, Linn. Soc. Bot. Jour. 27: 113. 1890.—*H. vinosa* (Berk.) Cooke, *Grevillea* 8: 149. 1880; Sacc. Syll. Fung. 6: 600. 1888.—*H. multispinulosa* Peck, *Bot. Gaz.* 7: 54. 1882; Sacc. Syll. Fung. 6: 600. 1888; Masee, Linn. Soc. Bot. Jour. 27: 108. 1890.—*H. scabriseta* Cooke in Ravenel, *Fungi Am.*, 717. 1882; Masee, Linn. Soc. Bot. Jour. 27: 113. *pl.* 5. *f.* 7. 1890.—*Lloydella scabriseta* (Cooke) v. Höhn. & Litsch. *K. Akad. Wiss. Wien Sitzungsber.* 115: 1580. 1906.—*Hymenochaete purpurea* Cooke & Morgan in Cooke, *Grevillea* 11: 106. 1883; Morgan, *Cincinnati Soc. Nat. Hist. Jour.* 10: 198. 1888; Sacc. Syll. Fung. 6: 597. 1888; Masee, Linn. Soc. Bot. Jour. 27: 115. 1890.—*Knieffia purpurea* (Cooke & Morg.) Bresadola, *Ann. Myc.* 1: 100. 1903.—*Peniophora intermedia* Masee, Linn. Soc. Bot. Jour. 25: 143. 1889; Sacc. Syll. Fung. 9: 238. 1891.—*Hymenochaete Kalchbrenneri* Masee, Linn. Soc. Bot. Jour. 27: 116. 1890; Sacc. Syll. Fung. 9: 230. 1891.

Illustrations: Gaudichaud, *Voyage Bonite Bot.* *pl.* 139. *f.* 1; Linn. Soc. Bot. Jour. 27: *pl.* 5. *f.* 7.

Type: in Kew Herb. and Curtis Herb.

Fructifications coriaceous-spongy, resupinate, effused, often becoming reflexed, light vinaceous lilac to dark lavender when young, at length brownish drab to snuff-brown, the upper surface spongy, pitted, somewhat sulcate, the reflexed margin thick, entire; hymenium even, somewhat velvety, sometimes cracking in drying, light vinaceous lilac to snuff-brown; in structure 500–1000  $\mu$  thick, composed of loosely interwoven, slightly colored hyphae  $3\frac{1}{2}$ –5  $\mu$  in diameter, not forming an intermediate layer; in the subhymenial region thick-walled organs 5–6  $\mu$  in diameter, darker colored than the hyphae, originate among the

hyphae and curve outward through the hymenium as sharp-pointed cystidia, even, rough-walled, or incrustated,  $100-200 \times 6-10 \mu$ , protruding up to  $40 \mu$ ; spores white in spore collection, even,  $6 \times 3\frac{1}{2} \mu$ .

Resupinate on areas 1-3 cm. in diameter, becoming laterally confluent for 10-15 cm., reflexed portion 2-5 mm. broad.

On fallen limbs of oak, hickory, and other frondose species. North Carolina to Texas and south-

ward from Ohio and Illinois, in Arizona, West Indies, and Central America; occurs also in Poland, Cochin China, and Australia. September to February, but collected occasionally in the other months of the year.

*S. umbrinum* may be recognized by the purple color of young specimens which fades or changes finally to snuff-brown, although usually showing a vinaceous tinge, and by its remarkable cystidia, which, on account of their color and lack of conspicuous incrustation, verge towards setae. However, these organs are paler colored and much more elongated than undoubted setae; furthermore, sections of fructifications in which these colored cystidia are present do not immediately darken when dilute potassium hydrate is brought in contact with them, as invariably happens to sections containing true setae. It has seemed best to retain for this species the name *Stereum umbrinum* B. & C., because the type of *Stereum umbrinum* Fr., Herb. Preiss., No. 2686, collected in Australia on *Banksia Menziesii*, must be found and studied to complete the Friesian description before it can be known whether the Preiss specimen is not really a *Hymenochaete*, *Eichleriella*, *Auricularia*, or, perhaps, even identical with *S. umbrinum* B. & C., a common species in Australia. The presence of a white, intermediate layer seems to preclude the

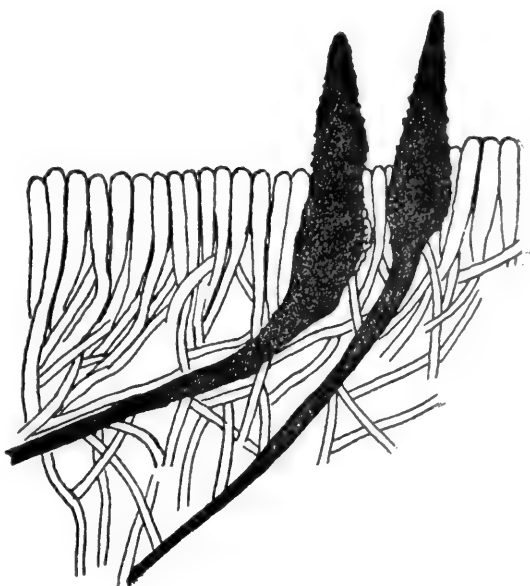


Fig. 31. *S. umbrinum*. Section of hymenial region  $\times 488$ , showing  $z$ , cystidia.

latter possibility. No. 2686 has not been found in the Preiss series of specimens in the Missouri Botanical Garden Herbarium; perhaps it is most likely to be found in the Stockholm collection.

Specimens examined:

Exsiccati: Ellis, N. Am. Fungi, 606 b, under the name *Stereum papyrinum*, and 1108; Ell. & Ev., N. Am. Fungi, 2315; Ravenel, Fungi Car. 2: 36, under the name *S. papyrinum*; Ravenel, Fungi Am., 118, under the name *S. papyrinum*, the type distribution of *Peniophora intermedia*, and 445, and 717, the type distribution of *Hymenochaete scabriseta*; Rabenhorst, Fungi Eur., 3524; de Thümen, Myc. Univ., 1504, under the name *Corticium murinum*, the type distribution of *Hymenochaete Kalchbrenneri*.

North Carolina: Asheville, E. Bartholomew, 5653 (in Mo. Bot. Gard. Herb., 44215); Creedmoor, J. G. Hall, comm. by Lloyd Herb., 10299 (in Mo. Bot. Gard. Herb., 55465).

South Carolina: H. W. Ravenel, Curtis Herb., 1903, type (in Kew Herb.), and in Ravenel, Fungi Car. 2: 36; Aiken, H. W. Ravenel, in Ravenel, Fungi Am., 445, and H. W. Ravenel, 1716 (in Curtis Herb., 2308, under the name *Hymenochaete cervina*); Clemson College, P. H. Rolfs, 1615, 1633.

Georgia: Darien, H. W. Ravenel, in Ravenel, Fungi Am., 117; Tallulah Falls, A. B. Seymour, comm. by W. G. Farlow, GG.

Florida: C. G. Lloyd, 2134, 4857, and W. W. Calkins, in Ellis, N. Am. Fungi, 606 b; Eustis, R. Thaxter, 12 (in Farlow Herb. and Mo. Bot. Gard. Herb., 43931); Gainesville, N. L. T. Nelson, comm. by Lloyd Herb., 427 (in Mo. Bot. Gard. Herb., 55624), and H. W. Ravenel, in Ravenel, Fungi Am., 118; Green Cove Springs, G. Martin, in Ellis, N. Am. Fungi, 1108; New Smyrna, C. G. Lloyd, 192, 2122, 2134.

Alabama: Peters, 770 (in Curtis Herb., under the name *S. papyrinum*); Auburn, P. H. Mell (in U. S. Dept. Agr. Herb. and Mo. Bot. Gard. Herb., 5106); Mobile, E. Bartholomew, 5751 (in Mo. Bot. Gard. Herb., 44221); Montgomery, R. P. Burke, 139, 150 (in Mo. Bot. Gard. Herb., 21228, 44906); Talapoosa region, F. S. Earle & C. F. Baker (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56598).

- Louisiana: *A. B. Langlois*, comm. by W. G. Farlow (in Mo. Bot. Gard. Herb., 44650); St. Martinville, *A. B. Langlois*, *A, B, C, ag*, and an *unnumbered specimen*, and in Ell. & Ev., N. Am. Fungi, 2315.
- Ohio: *A. P. Morgan*, 11, type of *Hymenochaete purpurea* (in Kew Herb.); Cincinnati, *C. G. Lloyd*, 190, and *A. P. Morgan*, comm. by Lloyd Herb., 2626; Linwood, *C. G. Lloyd*, 2261.
- Indiana: Greenwood, *M. C. Jensen*, comm. by C. J. Humphrey, 2133 (in Mo. Bot. Gard. Herb., 22825).
- Illinois: Christopher, *C. J. Humphrey*, 2133 (in Mo. Bot. Gard. Herb., 42926); Genesee, *E. T. & S. A. Harper*, 824.
- Missouri: Bismarck, *L. O. Overholts* (in Mo. Bot. Gard. Herb., 56716); Columbia, *B. M. Duggar*, 571; Pacific, *L. O. Overholts*, 3162 (in Mo. Bot. Gard. Herb., 5718); Perryville, *C. H. Demetrio*, in Rabenhorst, Fungi Eur., 3524; Pickering, *E. Bartholomew*, 6424 (in Mo. Bot. Gard. Herb., 55194); St. Louis, *N. M. Glatfelter*, 1187, comm. by N. Y. Bot. Gard. Herb.; Valley Park, *E. A. Burt* (in Mo. Bot. Gard. Herb., 44056, 44061).
- Arkansas: Bigflat, *W. H. Long*, 19858, 19895 (in Mo. Bot. Gard. Herb., 8965, 8883); Cass, *W. H. Long*, 19832, 19905 (in Mo. Bot. Gard. Herb., 8884, 8885); Womble, *W. H. Long*, 19821 in part, 19869 (in Mo. Bot. Gard. Herb., 14650, 9142).
- Texas: Gillespie Co., *C. Jermy*, 444 (in Mo. Bot. Gard. Herb., 5171); Gonzales, *C. L. Shear*, 1229.
- Arizona: 34 near Camp Lowell, *C. G. Pringle*, type of *Hymenochaete multispinulosa* (in N. Y. State Mus. Herb. and a portion in Burt Herb.).
- Cuba: *C. Wright*, Fungi Cubenses Wrightiani, 832, comm. by W. G. Farlow (in Mo. Bot. Gard. Herb., 43908), and *C. G. Lloyd*, 165 (in Mo. Bot. Gard. Herb., 55153); Ciego de Avila, *Earle & Murrill*, 607, comm. by N. Y. Bot. Gard. Herb.; La Magdalena, *Earle & Baker*, 2470, comm. by N. Y. Bot. Gard. Herb.; San Diego de Los Baños, *Earle & Murrill*, 263, comm. by N. Y. Bot. Gard. Herb.
- Porto Rico: Rio Piedras, *J. A. Stevenson*, 2389 (in Mo. Bot. Gard. Herb., 9441).
- Guatemala: Secanquim, *W. R. Maxon & R. Hay*, 3140a

Cochin China: authentic specimen of *Thelephora crassa* from Léveillé (in Kew Herb.).

Australia: *W. N. Cheesman*, comm. by E. M. Wakefield, Kew Herb. (in Mo. Bot. Gard. Herb., 44582); Victoria, *J. G. Luehmann*, in de Thümen, Myc. Univ., 1504, under the name of *Corticium murinum*, the type distribution of *Hymenochaete Kalchbrenneri*.

**60. *S. papyrinum*** Montagne in Ramon de la Sagra, Hist. Cuba Pl. Cell. 374. 1842; *ibid.*, folio ed., 9: 228. 1845; Syll. Crypt. 178. 1856; Berk. & Curtis, Linn. Soc. Bot. Jour. 10: 331. 1868. Plate 6, fig. 60.

*Peniophora papyrina* (Mont.) Cooke, Grevillea 8: 20. pl. 124. f. 9. 1879; Sacc. Syll. Fung. 6: 641. 1888; Masee, Linn. Soc. Bot. Jour. 25: 140. 1889.—*Stereum nicaraguense* Berk. & Curtis, Am. Acad. Arts & Sci. Proc. 4: 123. 1853; Sacc. Syll. Fung. 6: 567. 1888.—*S. nicaraguae* Berk. & Curtis in Masee, Linn. Soc. Bot. Jour. 27: 183. 1890.—An *Hymenochaete pallida* Cooke & Masee, Linn. Soc. Bot. Jour. 27: 97. 1890? See Patouillard, Myc. Soc. Fr. Bul. 10: 78. 1894, and Burt, Ann. Mo. Bot. Gard. 5: 367. 1918.

Illustrations: Cooke, Grevillea 8: pl. 124. f. 9; Australian Fungi, pl. 11. f. 82.

Type: in Kew Herb.

Fructification coriaceous-papery, thin, pliant, resupinate and widely effused, sometimes reflexed, rarely umbonate sessile,

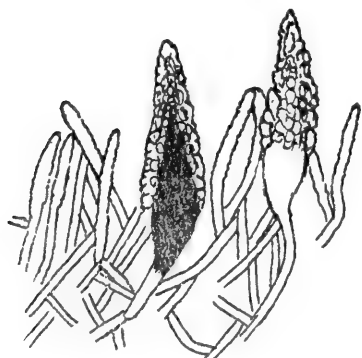


Fig. 32. *S. papyrinum*. Section of hymenium  $\times 488$ , showing cystidia and paraphyses. From authentic specimen.

the upper side tomentose, concentrically sulcate, drying snuff-brown, weathering to cartridge-buff, the margin entire; hymenium even, velvety, snuff-brown to Benzo-brown; in structure 500–600  $\mu$  thick exclusive of the tomentose covering, composed of longitudinally and loosely interwoven, even-walled, pale-colored hyphae 3–3½  $\mu$  in diameter, which give their color to the fructification, the intermediate layer not dense on its upper side but grading into the

tomentum; no conducting organs present; cystidia rather few and scattered, heavily and coarsely incrustated on the peripheral half, conical,  $30-75 \times 12-25 \mu$ , usually colored under the incrustation, confined to the hymenium; slender, flexuous paraphyses  $2\frac{1}{2} \mu$  in diameter are abundant in the hymenium; spores hyaline, even,  $4\frac{1}{2}-8 \times 3-4 \mu$ —but few found.

Resupinate on under side of limbs over areas up to  $25 \times 3\frac{1}{2}$  cm., and reflexed along both sides  $1-2\frac{1}{2}$  cm.

On under side of fallen limbs of frondose species. Florida, West Indies, Mexico, Colombia, and Brazil. October to May. Probably common.

*S. papyrinum* belongs in the group with *S. umbrinum* and *S. albo-badium*; resupinate specimens of these species require examination of sectional preparations for accurate determination. The specimens which have been distributed by Ravenel and by Ellis in their exsiccati as *S. papyrinum* are *S. umbrinum*. In its reflexed stage, *S. papyrinum* is much more broadly reflexed than *S. umbrinum* and is concentrically sulcate; its cystidia are heavily incrustated and from 12 to  $25 \mu$  in diameter by 30 to  $75 \mu$  long, while those of *S. umbrinum* are much longer in proportion to their diameter and often can be followed from deep in the subhymenium, taper so gradually and bear so little incrustation, and are so uniformly colored that some mycologists have regarded them as setae, although they do not satisfy the definition of setae. The cystidia of *S. papyrinum* are concolorous with the hyphae under the incrustation. *S. albo-badium* has cystidia heavily incrustated but smaller than those of *S. papyrinum* and not colored.

On account of their structure, I have included in *S. papyrinum* the Cuban specimens listed by Berkeley & Curtis as *S. membranaceum*, for I find nothing to show that these specimens were ever compared with the type of the latter in Herb. Willdenow and collected on the Isle of Bourbon in the Indian Ocean; there is nothing in the original description of *S. membranaceum* to show that this may not be more closely related to *S. fasciatum* than to *S. papyrinum*. I have referred to *S. papyrinum*, as umbonate-sessile forms, the specimen from Nicaragua distributed in Smith, Central Am. Fungi, 94, and a collection from Cuba by Underwood & Earle, 1584, which are cited below; these speci-

mens have cystidia of the minimum dimensions given for the species and with less than the usual incrustation, as is the case with cystidia of the type of *S. nicaraguense*; perhaps these two specimens are *Hymenochaete pallida*.

Specimens examined:

Exsiccati: Smith, Central Am. Fungi, 95 and 93 a and b, under the name *Stereum rufo-fulvum* (Mont.), and 94, under the name *S. purpureum*.

Florida: Adams Key, Dade Co., J. H. Small & C. A. Mosier, 5364, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 71448); Miami, W. H. Long, 18310 (in Mo. Bot. Gard. Herb., 55442); Palm Beach, R. Thaxter, 16 (in Mo. Bot. Gard. Herb., 43927).

Cuba: type, from Montagne (in Kew Herb.), and C. Wright, 274, and 240, both under the name *S. membranaceum* (both in Curtis Herb.); Alto Cedro, L. M. Underwood & F. S. Earle, 1481, 1492, 1584, comm. by N. Y. Bot. Gard. Herb.; Ceballos, C. J. Humphrey, 2726 (in Mo. Bot. Gard. Herb.); El Yunque Mt., Baracoa, L. M. Underwood & F. S. Earle, 364 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56714), and 739, 745, and 1233, comm. by N. Y. Bot. Gard. Herb.; Managua, Earle & Murrill, 32, comm. by N. Y. Bot. Gard. Herb.; San Diego de los Baños, Earle & Murrill, 264, 356, 362, 367, 380, all comm. by N. Y. Bot. Gard. Herb.

Porto Rico: Espinosa, J. A. Stevenson, 2751 (in Mo. Bot. Gard. Herb., 5554).

Jamaica: A. E. Wight, comm. by W. G. Farlow; Hope Gardens, F. S. Earle, 141, 165, 431, 494, all comm. by N. Y. Bot. Gard. Herb.; Port Maria, F. S. Earle, 467, comm. by N. Y. Bot. Gard. Herb.; Troy and Tyre, W. A. Murrill & W. Harris, 898, comm. by N. Y. Bot. Gard. Herb.; Westmoreland, F. S. Earle, 425A, comm. by N. Y. Bot. Gard. Herb.; San Juan, F. S. Earle, 62, comm. by N. Y. Bot. Gard. Herb.

Mexico: Colima, W. A. & E. L. Murrill, 637, 648, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54583, 54584); Jalapa, C. L. Smith, in Smith, Central Am. Fungi, 93a; Orizaba, W. A. & E. L. Murrill, 748, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54655).

Nicaragua: *C. Wright*, 264, type of *S. nicaraguense* (in Curtis Herb.); Castillo Viejo, *C. L. Smith*, in Smith, Central Am. Fungi, 95; Ometepe, *C. L. Smith*, in Smith, Central Am. Fungi, 93b; San Juan del Norte, *C. L. Smith*, in Smith, Central Am. Fungi, 94.

Canal Zone: Gatun, *M. A. H.* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56715).

Colombia: Bonda, *C. F. Baker*, 26.

Brazil: Santo Anna da Chapada, Matto Grosso, *G. O. Malme*, 564, comm. by L. Romell.

**61. *S. Earlei* Burt, n. sp.**

Plate 6, fig. 61.

Type: in Burt Herb. and N. Y. Bot. Gard. Herb.

Fructification coriaceous-spongy, dry, effuso-reflexed, with the upper surface tomentose, snuff-brown, the margin entire; hymenium mouse-gray and somewhat pruinose in the older portion, snuff-brown and veined toward the margin; in structure with the intermediate layer  $150\ \mu$  thick, composed of longitudinally interwoven, colored hyphae  $3\text{--}4\ \mu$  in diameter, with the hymenial layer up to  $200\ \mu$  thick, zoned, containing cystidia in all its portions; cystidia colored, heavily hyaline incrusted on the outer half, slender-pointed,  $45\text{--}60 \times 5\text{--}12\ \mu$ , protruding up to  $30\ \mu$ ; spores hyaline, even,  $5\text{--}6 \times 3\text{--}3\frac{1}{2}\ \mu$ .

Reflexed portion up to 1 cm. broad; resupinate portion laterally confluent for 8 cm., but a strip only 1 cm. wide removed from the substratum.

In a wood pile. Hope Gardens, Jamaica. November.

Fructifications of this species have the general aspect of those of *S. papyrinum*, but are thinner, more compactly interwoven, with slenderer cystidia, and have the hymenial layer up to  $200\ \mu$  thick and composed of several zones; cystidia are present in each of these zones, and those of the innermost zones do not reach to the surface of the hymenium. In *S. papyrinum*

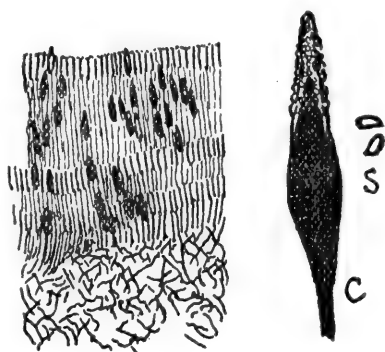


Fig. 33. *S. Earlei*. Section of type  $\times 68$ ; cystidium, *c*, and spores, *s*,  $\times 488$ .

the hymenium is a single layer of basidia, cystidia, and paraphyses. In the collector's note, the color is given as "violet purple edged with white," but colors of dried specimens are as given above.

Specimens examined:

Jamaica: Hope Gardens, *F. S. Earle*, 151, type, comm. by N. Y. Bot. Gard. Herb.

**62. *S. Chailletii*** Persoon, *Myc. Eur.* 1: 125. 1822 (in \*\*\*\*\**Stereum* of *Thelephora*); Fries, *Epier.* 551. 1838; *Hym. Eur.* 642. 1874; *Sacc. Syll. Fung.* 6: 566. 1888; Bresadola, *I. R. Accad. Agiati Atti III.* 3: 106. 1897. Plate 6, fig. 62.

*Thelephora Chailletii* Pers. in Fries, *Elenchus Fung.* 1: 188. 1828.—*Xerocarpus ambiguus* Karsten, *Soc. pro Fauna et Flora Fennica Actis* 2<sup>1</sup>: 38. 1881.—*Trichocarpus ambiguus* Karsten, *Finska Vet.-Soc. Bidrag Natur och Folk* 48: 407. 1889.—*Hymenochaete ambigua* Karsten in *Sacc. Syll. Fung.* 9: 230. 1891.—*Peniophora Atkinsonii* Ellis & Everhart, *Phila. Acad. Nat. Sci. Proc.* 1894: 324. 1894; *Sacc. Syll. Fung.* 11: 129. 1895.

Fructification coriaceous, nearly always resupinate, effused, occasionally reflexed, with upper surface tomentose, more or

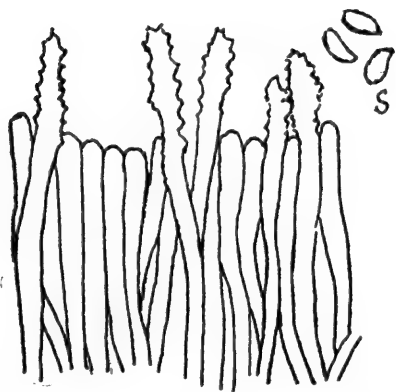


Fig. 34. *S. Chailletii*. Section of hymenium  $\times 665$ , showing paraphyses; spores, s.

less concentrically sulcate when well developed, hair-brown to clove-brown, the margin entire; hymenium rather uneven, not polished, avellaneous to wood-brown; in structure 300–600  $\mu$  thick, composed of somewhat longitudinally and not densely interwoven hyphae 3–4½  $\mu$  in diameter, some of which are hyaline, thin-walled, and with deeply staining protoplasm, and many thick-walled, stiff, giving their color to the fructification, and

curving into the hymenium where they terminate in cystidia; cystidia slightly colored, roughened above, 50–120  $\times$  4–4½  $\mu$ , protruding up to 20  $\mu$ , slender-pointed; spores white in spore collection, ellipsoidal, 5–6  $\times$  3–3½  $\mu$ .

Wholly resupinate specimens  $\frac{1}{2}$ –2 cm. in diameter, becoming laterally confluent over areas up to  $15 \times 2$  cm.; reflexed portions 1–5 mm. broad—up to 2 cm. broad in European specimens.

On dead *Tsuga*, *Pseudotsuga*, *Abies*, *Picea*, *Larix*, *Thuja*, and *Cupressus*. Canada to New Jersey, in Wisconsin, in Idaho to British Columbia and Washington, and in New Mexico at altitude 7500 ft. Occurs also in Europe. Probably throughout the year but most collections dated July to October. Infrequent.

*S. Chailletii* occurs just often enough reflexed so that an observant collector will soon locate his gatherings correctly in *Stereum*. It is noteworthy by its colored cystidia of the same type as those of *S. umbrinum* but of only half the diameter of those of the latter, and by its occurrence on conifers of the species named above, and by restriction in geographic range to the northern United States and southern Canada and the Rocky Mountain plateau. The avellaneous, somewhat velvety hymenium is so uniform in appearance that when once learned this species may usually be recognized thereafter at sight.

Specimens examined:

Exsiccati: Ell. & Ev., N. Am. Fungi, 2904, under the name *Hymenochaete simulans* Ell. & Ev., n. sp., but description does not seem to have been published; Krieger, Fungi Sax., 1202.

Norway: Christiania, M. N. Blytt, determined by E. Fries (in Herb. Fries).

Finland: Merimason, P. A. Karsten, authentic specimen of *Trichocarpus ambiguus*.

Sweden: Stockholm, L. Romell, 24, 25, 341, all under the name *Stereum abietinum*.

France: Arnac, Aveyron, A. Galzin, unnumbered spec. and 17948, comm. by H. Bourdot, 7926, and unnumbered respectively.

Switzerland: Sachs, W. Krieger, in Krieger, Fungi Sax., 1202.

Italy? or perhaps Hungary?: locality not given, G. Bresadola.

Canada: Cow's Swamp, J. Macoun, 115; Dow's Swamp, J. Macoun, 249 in part.

Ontario: Ottawa, J. Macoun, 57.

Vermont: Ripton, E. A. Burt, two collections.

New York: Beaver River, Adirondack Mts., G. F. Atkinson, Bot. Dept. of Cornell Univ., 4607; Ithaca, G. F. Atkinson, 14189; Syracuse, G. F. Atkinson, 677, part of type of *Peniophora Atkinsonii*.

New Jersey: Newfield, *J. B. Ellis*, in *Ell. & Ev.*, N. Am. Fungi, 2904.

Wisconsin: *M. C. Jensen*, comm. by *C. J. Humphrey*, 2502 (in *Mo. Bot. Gard. Herb.*, 5060).

Idaho: Coolin, *J. R. Weir*, 11133, 11527, 11940 (in *Mo. Bot. Gard. Herb.*, 56717, 56722, 56718); Kaniksu National Forest, Priest River, *J. R. Weir*, 65, 110 (the latter in *Mo. Bot. Gard. Herb.*, 13272).

British Columbia: Kootenai Mts., near Salmo, *J. R. Weir*, 482, 510, 513 (in *Mo. Bot. Gard. Herb.*, 18282, 3771, 1739); Sidney, *J. Macoun*, 81 (in *Mo. Bot. Gard. Herb.*, 5887); Squamish, *J. Macoun*, 533 (in *Mo. Bot. Gard. Herb.*, 55186).

Washington: Bellingham, *J. R. Weir*, 7559 (in *Mo. Bot. Gard. Herb.*, 55467, 55790); Stanwood, *C. J. Humphrey*, 7358 (in *Mo. Bot. Gard. Herb.*, 20103).

New Mexico: Tejano Experiment Station, near Albuquerque, *W. H. Long & P. W. Seay*, comm. by *W. H. Long*, 21313 (in *Mo. Bot. Gard. Herb.*, 54884).

**63. *S. ferreum*** Berk. & Curtis, *Linn. Soc. Bot. Jour.* 10: 332. 1868; *Sacc. Syll. Fung.* 6: 586. 1888; *Massee*, *Linn. Soc. Bot. Jour.* 27: 197. 1890. Plate 6, fig. 63.

An *Stereum areolatum* Fries?

Type: in Kew Herb. and Curtis Herb.

Fructifications corky, effused, usually resupinate, sometimes becoming barely reflexed on the upper side and there drab,

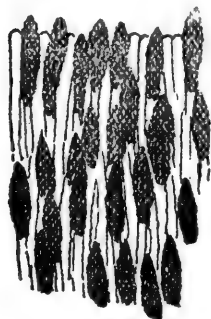


Fig. 35. *S. ferreum*. Section of hymenial region of type,  $\times 488$ . Shows rough, colored cystidia.

nearly even; hymenium somewhat colliculose, not shining, cinnamon-drab to drab; in structure up to  $1100\ \mu$  thick, with the intermediate layer  $500\ \mu$  thick, bordered by a darker zone next to substratum and composed of colored, thick-walled, somewhat ascending, interwoven hyphae  $3\text{--}3\frac{1}{2}\ \mu$  in diameter; hymenial layer up to  $600\ \mu$  thick, containing in all parts innumerable incrustated cystidia, minutely rough, either colored throughout or colored under the incrustation,  $20\text{--}25 \times 5\text{--}7\ \mu$ , protruding up to  $6\ \mu$ ; spores hyaline, even, globose,  $4\ \mu$  in diameter, but few found.

Fructifications 4–8×1–2 cm., margin reflexed 1 mm.

On bark of fibrous structure of an unrecorded species. Cuba and Jamaica. Rare.

*S. ferreum* may be recognized by its resupinate, drab fructifications, rarely having a narrowly pileate margin, and by the thick hymenial layer containing innumerable small colored cystidia which at the surface of the hymenium have the colorless incrustation roughened. So few spores were observed that it may be they were foreign spores. *S. ferreum* is at least closely related to *S. areolatum*, a European species occurring on *Taxus*, and I have been inclined to regard it as not specifically distinct from the latter, but we do not know yet that *S. ferreum* occurs on *Taxus* or a related genus; if not a strictly tropical species but a synonym of *S. areolatum*, the lack of a northern range in eastern United States is at variance with species common to Europe and North America.

Specimens examined:

Cuba: *C. Wright*, 199, type (in Kew Herb.).

Jamaica: Cinchona, *W. A. & E. L. Murrill*, 458, comm. by N. Y. Bot. Gard. Herb.; Sir John Peak, *W. A. Murrill*, 803, comm. by N. Y. Bot. Gard. Herb.

64. *S. cinerascens* (Schw.) Masee, Linn. Soc. Bot. Jour. 27: 179. 1890. Plate 6, fig. 64.

*Thelephora cinerascens* Schweinitz, Am. Phil. Soc. Trans. N. S. 4: 167. 1832.—*Hymenochaete cinerascens* (Schw.) Léveillé, Ann. Sci. Nat. Bot. III. 5: 152. 1846; Morgan, Cincinnati Soc. Nat. Hist. Jour. 10: 197. 1888.—*Peniophora cinerescens* (Schw.) Sacc. in Sacc. Syll. Fung. 6: 646. 1888.—*P. Schweinitzii* Masee, Linn. Soc. Bot. Jour. 25: 145. 1889.—*Corticium aschistum* Berkeley & Curtis, Am. Acad. Arts & Sci. Proc. 4: 123. 1858.—*Peniophora Berkeleyi* Cooke, Grevillea 8: 20. pl. 122. f. 4. 1879; Sacc. Syll. Fung. 6: 642. 1888; Masee, Linn. Soc. Bot. Jour. 25: 144. 1889.—*Stereum moricola* Berkeley, Grevillea 1: 162. 1873; Sacc. Syll. Fung. 6: 567. 1888.—*Peniophora moricola* (Berk.) Masee, Linn. Soc. Bot. Jour. 25: 141. 1889.—*Stereum dissitum* Berkeley, Grevillea 1: 164. 1873.—*Peniophora dissita* (Berk.) Cooke, Grevillea 8: 150. 1880; Sacc. Syll. Fung. 6: 645. 1888; Masee, Linn. Soc.

Bot. Jour. **25**: 143. 1889.—*Corticium ephebi* Berk. & Curtis, Grevillea **1**: 178. 1873; Sacc. Syll. Fung. **6**: 618. 1888.—*Peniophora ephebia* (Berk. & Curtis) Masee, Linn. Soc. Bot. Jour. **25**: 151. 1889.—*Stereum neglectum* Peck, N. Y. State Mus. Rept. **33**: 22. 1880.—*Peniophora neglecta* Peck, N. Y. State Mus. Rept. **40**: 76. 1887.—*P. occidentalis* Ellis & Everhart, Torr. Bot. Club Bul. **24**: 277. 1897; Sacc. Syll. Fung. **14**: 224. 1900.—*Lloydella occidentalis* (Ell. & Ev.) v. Höhn. & Litsch. K. Akad. Wiss. Wien Sitzungsber. **116**: 791. 1907.—*Stereum purpurascens* Lloyd, Myc. Writ. **4**. Letter 53: 14. 1914.

Illustrations: Cooke, Grevillea **8**: pl. 122. f. 4. 1879.

Type: in Herb. Schweinitz, Curtis Herb., and Kew Herb.

Fructifications coriaceous, often resupinate and effused, sometimes reflexed, with upper surface strigose-hairy, concentrically sulcate, warm buff to pinkish buff, weathering gray, often laterally confluent, the margin entire; hymenium minutely bristly with the cystidia, even, drying pinkish buff to drab; in structure 400–600  $\mu$  thick excluding the hairy covering, with the intermediate layer composed of longitudinally interwoven, thick-walled hyphae 4–4½  $\mu$  in diameter; cystidia large, incrusting, thick-walled, often brownish at the base, conical, 100–150  $\times$  12–20  $\mu$ , emerging up to 40–70  $\mu$ ; spores white in spore collection, even, 10–12  $\times$  6  $\mu$ , somewhat flattened on one side.

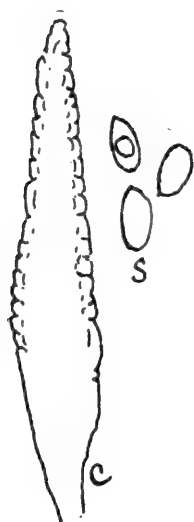


Fig. 36.  
*S. cinerascens*.  
Cystidium, c, and  
spores, s,  $\times$  488.

Resupinate portions 1–10  $\times$  1–2½ cm.; reflexed margin 2–8 mm. broad.

On logs and fallen limbs of *Ulmus*, *Tilia*, *Robinia*, *Morus*, etc. Canada to Texas, westward to California, and in Mexico, Cuba, and Brazil. Common. June to February.

Fully developed specimens of *S. cinerascens* may be recognized by their narrowly reflexed, strigose-hairy pileus and hymenium somewhat pruinose with the large, bristly, colorless cystidia. In sectional preparations, these cystidia are usually slightly colored at the base and more numerous and larger than in any other North American *Stereum*; the spores are very large also.

Wholly resupinate specimens have merely a superficial resemblance to *Peniophora*, for they are loosely attached to the substratum by the layer of loosely arranged, coarse hairs which forms the strigose covering of the upper surface of a reflexed specimen; the intermediate layer is well developed in resupinate specimens, and the cystidia and spores are the same as in reflexed specimens. It is surprising that a species so common and so marked in its microscopical characters should have seemed new so many times.

Specimens examined:

Exsiccati: Bartholomew, *Fungi Col.*, 2337, 4648; Ell. & Ev., *N. Am. Fungi*, 2314, type distribution of *Peniophora occidentalis*; Shear, *N. Y. Fungi*, 313.

Canada: *J. Macoun*, 45, 68, and another specimen comm. by J. B. Ellis, under the name *Peniophora occidentalis*; Lower St. Lawrence valley, *J. Macoun*, 33, 34, 79.

Quebec: Hull, *J. Macoun*, *Nat. Hist. Surv. of Canada*, 359, and *J. Macoun*, 52; Ironsides, *J. Macoun*, 282.

Ontario: Guelph, *J. H. Faull*, *Univ. Toronto Herb.*, 669 (in *Mo. Bot. Gard. Herb.*, 44916); Jefferson, *G. H. Graham*, *Univ. Toronto Herb.*, 673 (in *Mo. Bot. Gard. Herb.*, 44922); Ottawa, *J. Macoun*, 234; Toronto, *J. H. Faull*, *Univ. Toronto Herb.*, 651 (in *Mo. Bot. Gard. Herb.*, 44947).

Vermont: Middlebury, *E. A. Burt*, six collections.

Massachusetts: *W. G. Farlow*, two collections.

New York: Alcove, *C. L. Shear*, 1312, and in Shear, *N. Y. Fungi*, 313; Cayuga Lake Basin, *G. F. Atkinson*, 3020, 8023, J; Greenbush, *C. H. Peck* (in *N. Y. State Mus. Herb. and Mo. Bot. Gard. Herb.*, 56020); Ithaca, *C. J. Humphrey*, 261, and a specimen comm. by G. F. Atkinson, *Van Hook*, comm. by G. F. Atkinson, 7988; Knowersville, *C. H. Peck* (in *N. Y. State Mus. Herb. and Mo. Bot. Gard. Herb.*, 55755); Syracuse, *L. M. Underwood*, 5 (in *N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb.*, 56709); Verona, *C. H. Peck*, type of *Stereum neglectum* (in *N. Y. State Mus. Herb.*, and perhaps a duplicate in *Mo. Bot. Gard. Herb.*, 55754).

Pennsylvania: Bethlehem, *Schweinitz*, type (in *Herb. Schweinitz*, *Curtis Herb.*, and *Kew Herb.*).

South Carolina: *Curtis Herb.*, 5997, type of *Stereum moricola* (in *Kew Herb.*).

- Georgia: Atlanta, *E. Bartholomew*, 5694 (in Mo. Bot. Gard. Herb., 44220), and in Bartholomew, Fungi Col., 4648.
- Florida: Cocoanut Grove, *R. Thaxter*, 95 (in Mo. Bot. Gard. Herb., 43922); Miami, *W. H. Long*, 12951 (in Mo. Bot. Gard. Herb., 55102); Totten Key, *P. H. Rolfs*.
- Alabama: *Peters*, 923, type of *Corticium ephebi*, 1004, 1007 (in Curtis Herb., 6050, 6088, and 6089 respectively, and in Kew Herb.).
- Texas: *C. Wright*, Curtis Herb., 3903, type of *Stereum dissitum* (in Kew Herb., and probably a co-type in Burt Herb., and U. S. Dept. Agr. Herb.).
- Michigan: Ann Arbor, *C. H. Kauffman*, 25; New Richmond, *C. H. Kauffman*, 64 (in Mo. Bot. Gard. Herb., 19651).
- Ohio: Cincinnati, *A. P. Morgan*, comm. by Lloyd Herb., 2590, and *A. P. & S. V. Morgan*, comm. by U. S. Dept. Agr. Herb., under the name *Hymenochaete imbricatula* as determined by Morgan; Linwood, *C. G. Lloyd*, 3553, 02835.
- Indiana: Hibernian Mills, *Whetzel & Reddick*, comm. by D. Reddick, 2.
- Minnesota: Cass Lake, *J. R. Weir*, 324 (in Mo. Bot. Gard. Herb., 6968); Clearwater Lake, *F. Weiss*, 4 (in Mo. Bot. Gard. Herb., 56634); Wright Co., *F. Weiss* (in Overholts Herb., 5367).
- Iowa: Webster, *O. M. Oleson*, 437 (in Mo. Bot. Gard. Herb., 44060); Woodbine, *C. J. Humphrey & C. W. Edgerton*, comm. by C. J. Humphrey, 6535 (in Mo. Bot. Gard. Herb., 14042).
- Missouri: Creve Coeur, *P. Spaulding* (in Mo. Bot. Gard. Herb., 5137); Upper Creve Coeur, *E. A. Burt* (in Mo. Bot. Gard. Herb., 56711).
- Arkansas: Fordyce, *C. J. Humphrey*, 5778.
- Nebraska: Lincoln, *C. L. Shear*, 1052; Pawnee City, *C. L. Shear*, 1016.
- Kansas: Louisville, *E. Bartholomew*, in Bartholomew, Fungi Col., 2337; Rooks Co., *E. Bartholomew* (in Burt Herb. and Mo. Bot. Gard. Herb., 5011).
- Montana: *F. W. Anderson*, in Ell. & Ev., N. Am. Fungi, 2314.
- California: Bear Valley, near Olema, *M. A. H.* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56591); Berkeley,

*H. A. Lee*, comm. by *W. A. Setchell*, 1020 (in *Mo. Bot. Gard. Herb.*, 44304).

Mexico: Xuchiles, near Cordoba, *W. A. & E. L. Murrill*, 1181, 1213, comm. by *N. Y. Bot. Gard. Herb.* (in *Mo. Bot. Gard. Herb.*, 54590, 54591).

Nicaragua: *C. Wright*, 274, type of *Corticium aschistum* and *Peniophora Berkeleyi* (in *Curtis Herb.*).

Cuba: *C. G. Lloyd*, 428 (in *Mo. Bot. Gard. Herb.*, 55157); Alto Cedro, *Earle & Murrill*, 515 (in *N. Y. Bot. Gard. Herb.* and *Mo. Bot. Gard. Herb.*, 56291); Havana, *Bro. Leon*, comm. by *J. R. Weir*, 10188 (in *Mo. Bot. Gard. Herb.*, 56216).

Jamaica: Chester Vale, *W. A. & E. L. Murrill*, 343, comm. by *N. Y. Bot. Gard. Herb.*

Brazil: Matto Grosso, Santa Anna da Chapada, *G. V. Malme*, 572, comm. by *L. Romell*.

**65. *S. magnisporum* Burt, n. sp.**

Plate 6, fig. 65.

Type: in Burt Herb.

Fructifications coriaceous-gelatinous, thin, resupinate, becoming confluent, free all around, with margin reflexed on the upper side, probably white, drying pale pinkish buff, hoary, the margin white, entire; hymenium even or with one or two broad veins, setulose with the large cystidia, drying pinkish buff; in structure 300  $\mu$  thick when dry, swelling to 1200–1500  $\mu$  thick when wet for sectioning, of gelatinous consistency, composed of loosely interwoven, hyaline hyphae 2  $\mu$  in diameter, not incrustated; hymenial layer not zonate, composed of large simple basidia 45–60  $\times$  15  $\mu$ , having 4 sterigmata 12  $\mu$  long, of hyaline, filiform, flexuous paraphyses 2–2½  $\mu$  in diameter, not exceeding the basidia, and of conical, incrustated cystidia 45–90  $\times$  12–15  $\mu$ , protruding up to 60  $\mu$ ; spores hyaline, even, 15–20  $\times$  12–14  $\mu$ .

Fructifications 2–6 mm. in diameter, laterally confluent for 15 mm., margin reflexed for 1–2 mm.

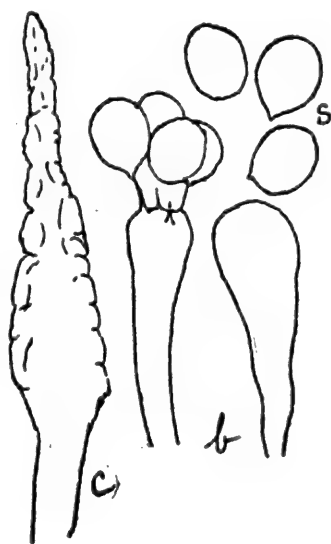


Fig. 37. *S. magnisporum*. Cystidium, c, basidia, b, and spores, s,  $\times$  488. From type.

On dead limbs of a frondose species. Jamaica. December to January.

*S. magnisporum* may be recognized by its small, whitish fructifications, with narrowly reflexed or free margin, pale hymenium distinctly setulose with the large cystidia, and by the very large spores. The large spores and basidia show relation of *S. magnisporum* to *Aleurodiscus*, but the absence of granular matter or of any unusual character of the paraphyses leads to the belief that this species will usually be sought for among the *Stereums*.

Specimens examined:

Jamaica: Chester Vale, W. A. & E. L. *Murrill*, 328, type, comm. by N. Y. Bot. Gard. Herb.; Cinchona, W. A. & E. L. *Murrill*, 522, comm. by N. Y. Bot. Gard. Herb.

66. *S. spumeum* Burt, n. sp. Plate 6, fig. 66.

*Corticium spumeum* Berk. & Rav. in Curtis Herb. (in part); *Grevillea* 20: 13. 1891 (in part—nomen).—*C. ochroleucum*, "as resupinate ambient condition," Berk. & Curtis, *Grevillea* 1: 166. 1873, but not *Stereum ochroleucum* Fries.—Not *Corticium ochroleucum* var. *erimosum* Berk. & Curtis, *Grevillea* 1: 166. 1873.

Type: in Burt Herb.

Fructifications spongy-soft, effused, resupinate, separable, sometimes narrowly reflexed, the upper surface tomentose and becoming cartridge-buff to pinkish buff in the herbarium, the margin entire; in structure 400–1500  $\mu$  thick, composed of loosely interwoven, hyaline, thick-walled hyphae 3–4½  $\mu$  in diameter, sometimes nodose-septate, the intermediate layer not bordered on its upper side by a crust-like or colored zone; hymenium even, cream-buff to pinkish buff; no conducting organs; cystidia incrusted, 36–60  $\times$  9–12  $\mu$ , sometimes protruding up to 40  $\mu$ ; spores hyaline, even, 5–9  $\times$  3–4  $\mu$ .

Resupinate over areas 1–10  $\times$  1–5 cm., reflexed portion 1–4 mm. broad when present.

On bark and wood of dead beech, oak, and other frondose limbs. New York to Mexico. August to January. Rare.

*S. spumeum* is noteworthy by its narrowly reflexed pileus, spongy-soft throughout, and without differentiation of its sur-

face of soft, matted, interwoven hairs from the hyphae of the intermediate region, by its buff hymenium, and by its incrusted cystidia. These incrusted cystidia and different aspect of the fructifications afford sharp separation from *S. ochraceo-flavum*; *S. ochroleucum* and *S. rugosiusculum* have the general aspect of *S. spumeum* but both lack incrusted cystidia, and *S. rugosiusculum* has in its subhymenial region pyriform, vesicular organs. *S. spumeum* is so frequently resupinate or very narrowly reflexed that gatherings are likely to be referred to *Peniophora*.

Specimens examined:

New York: Hudson Falls, *S. H. Burnham*, 27 (in Mo. Bot. Gard. Herb., 54486).

Pennsylvania: *E. Michener*, 1864 (in Curtis Herb., under the name *Corticium giganteum*).

South Carolina: Aiken, on oak limbs, *H. W. Ravenel*, 1772 (in Curtis Herb., under the name *Corticium ochroleucum*, "formerly *C. spumeum*").

Louisiana: Baton Rouge, *Edgerton & Humphrey*; St. Martinville, *A. B. Langlois*, *E*, type

Mexico: Guernavaca, *W. A. & E. L. Merrill*, 405, 413, 414, 498, 503, 520, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54520–54523, 56685, 55524); Cordoba, *W. A. & E. L. Merrill*, 1214, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54592).

**67. *S. erumpens* Burt, n. sp.**

Plate 6, fig. 67.

Type: in Burt Herb.

Fructifications corky, rarely resupinate, usually bursting out from the inner bark as small pezizaeform, orbicular disks or cups with elevated black margins and cinereous or pallid neutral gray hymenium; these fructifications may become crowded as if confluent, and then broken up into frustules and remain attached by the under side to the substratum, or the margin on the upper side may grow outward so as to form umbonate, sessile pilei attached by the umbo and lower side, with the upper surface narrowly concentrically sulcate, mummy-brown to fuscous; hy-

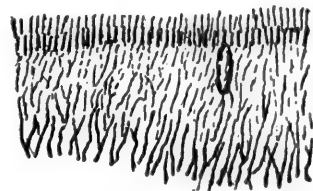


Fig. 38. *S. erumpens*.  
Section of type,  $\times 90$ .

menium even or somewhat tubercular, pallid neutral gray; in structure 200–300  $\mu$  thick, composed of ascending, densely interwoven hyphae both colored and hyaline, the former  $3\frac{1}{2}$   $\mu$  in diameter, with the tips arranged side by side in colored subhymenial zones, mark the 1–3 strata finally present; cystidia incrusted, cylindric,  $30\text{--}60 \times 8\text{--}20$   $\mu$ , sometimes protruding up to 20  $\mu$  beyond the hymenium, starting from all parts of the fructification; spores hyaline, even,  $5\text{--}7 \times 1\frac{1}{2}\text{--}2\frac{1}{2}$   $\mu$ .

Fructifications 1–2 $\frac{1}{2}$  mm. in diameter, reflexed 1–2 mm.

On dead limbs of alder, chestnut, willow, and other frondose species. Rhode Island to Alabama and westward to Washington and Oregon. March to January. Occasional.

*S. erumpens* combines the characters of *S. versiforme* and *Peniophora cinerea*; it is more constantly and distinctly reflexed than *S. versiforme*, always has a gray hymenium, and has quite a different mode of origin from the latter. In the type small blackish bodies burst out from the bark, open at the tip, disclosing whitish hymenium, and then grow to mature condition. Specimens at hand do not show how such a large resupinate fructification as that collected by E. T. and S. A. Harper, No. 819, cited below, does arise, and I may be wrong in referring the specimen to *S. erumpens*. An important microscopical detail of *S. erumpens* is the narrow olivaceous zone of colored hyphal tips at the very base of the basidia of the hymenium.

Specimens examined:

Exsiccati: Ellis, N. Am. Fungi, 720, under the name *Corticium quercinum* var. *scutellatum*.

Rhode Island: Lincoln, *F. W. Collins*.

New York: East Galway, *E. A. Burt*; Ithaca, *C. J. Humphrey*, 2568 (in Mo. Bot. Gard. Herb., 20784); Karner, *H. D. House* (in N. Y. State Mus. Herb. and Mo. Bot. Gard. Herb., 55210); New Scotland, *C. H. Peck* (in N. Y. State Mus. Herb., T 28, and Mo. Bot. Gard. Herb., 54658).

New Jersey: Newfield, *J. B. Ellis*, in Ellis, N. Am. Fungi, 720.

Maryland: Takoma Park, *C. L. Shear*, 959.

District of Columbia: North Takoma, *C. L. Shear*, 1043, type.

Georgia: Raleigh, *R. M. Harper*, 2037b, comm. by P. L. Ricker, and (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 42597).

Alabama: Auburn, *F. S. Earle*, 2301 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56292).

Indiana: Scottsburg, *J. R. Weir*, 5836 (in Mo. Bot. Gard. Herb., 55462).

Illinois: Glencoe, *E. T. & S. A. Harper*, 819, 937.

Arkansas: Fayetteville, *R. R. Rosen*, comm. by L. O. Overholts, 5117 (in Mo. Bot. Gard. Herb., 56358).

Montana: Missoula, *J. R. Weir*, 354 (in Mo. Bot. Gard. Herb., 9435).

Washington: Brewerton, *E. Bartholomew*, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 4939).

Oregon: Grants Pass, *J. R. Weir*, 8701 (in Mo. Bot. Gard. Herb., 36742).

68. *S. sulcatum* Burt in Peck, N. Y. State Mus. Rept. 54: 154. 1901; Lloyd, Myc. Writ. 5. Notes 44: 619. text f. 878. 1917. Plate 6, fig. 68.

Illustrations: Lloyd, *loc. cit.*

Type: in Burt Herb., N. Y. State Mus. Herb., and Bresadola Herb.

Fructification corky, rigid, resupinate or effuso-reflexed, with the reflexed part becoming glabrous, bister, irregular, deeply and concentrically sulcate; hymenium uneven or somewhat tubercular, not polished, drying between light buff and pinkish buff, assuming a reddish color where bruised; in structure 600–1500  $\mu$  thick, with the intermediate layer bordered by a dark dense zone on its upper side, and composed of very densely and longitudinally interwoven, hyaline hyphae 3–3½  $\mu$  in diameter, the hymenial layer becoming zonate or stratose; no colored conducting organs; cystidia incrusted, 30–50  $\times$  8–12  $\mu$ ; spores white in spore collection, even, subglobose, 4–6  $\times$  3–5  $\mu$ .

Confluent over areas 3–15  $\times$  1–8 cm.; reflexed margin 3–10 mm. broad.

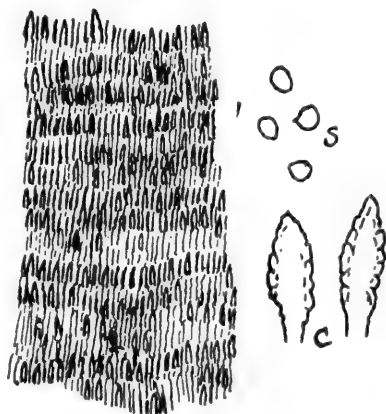


Fig. 39. *S. sulcatum*. Section of hymenial region  $\times$  90; cystidia, c, and spores, s,  $\times$  665.

On logs and stumps of *Tsuga*, *Abies*, *Picea*, *Taxodium*, *Pseudotsuga*, and *Larix*. Canada to Texas and westward to British Columbia and Washington. May to November. Frequent.

*S. sulcatum* may be recognized by its brown, deeply and sharply and concentrically sulcate pileus, ruddy hymenium, incrustated cystidia, and occurrence on conifers. Where the northern hemlock occurs it is usually on this species. *S. Chailletii* is found on conifers throughout the same northern geographical range, but is much thinner and does not have as large nor incrustated cystidia. In the older herbaria *S. sulcatum* is often found under the name *Stereum rugosum*, to which specimens were erroneously referred.

Specimens examined:

Exsiccati: Ell. & Ev., N. Am. Fungi, 1935, under the name *Stereum rugosum*; Ell. & Ev., Fungi Col., 217, under the name *S. rugosum*.

Canada: J. Macoun, 27, 32, 43; Lower St. Lawrence Valley, J. Macoun, 69a, 76.

Ontario: Ottawa, J. Macoun, 234, and in Ell. & Ev., N. Am. Fungi, 1935.

New Hampshire: North Conway, L. O. Overholts & H. H. York, comm. by L. O. Overholts, 5033 (in Mo. Bot. Gard. Herb., 56350).

New York: Floodwood, E. A. Burt, type; Ithaca, G. F. Atkinson, 2023, 2617, 2636, 5072, 7889, 19398, and C. O. Smith, comm. by G. F. Atkinson, 8032; North Elba, C. H. Kauffman, 7 (in Mo. Bot. Gard. Herb., 21821); Pompey, L. M. Underwood, in Ell. & Ev., Fungi Col., 217.

Louisiana: Lutchet, H. von Schrenk, 26 (in Mo. Bot. Gard. Herb., 42637).

Texas: Houston, H. W. Ravenel, 113 (in U. S. Dept. Agr. Herb., under the herbarium name *Stereum tricolor*).

Wisconsin: Ladysmith, C. J. Humphrey, 1908 (in Mo. Bot. Gard. Herb., 42917).

West Virginia: comm. by W. G. Farlow.

Tennessee: Elkmont, C. H. Kauffman, 60 (in Mo. Bot. Gard. Herb., 16403).

Montana: Gallatin National Forest, Spring Hill, G. G. Hedgcock, comm. by C. J. Humphrey, 2164 (in Mo. Bot. Gard. Herb., 10399).

Idaho: Kaniksu National Forest, Priest River, *J. R. Weir*, 4, 29, 58, 74, 82, and 102 (the last in Mo. Bot. Gard. Herb., 16029).

Canadian Rocky Mts.: Lake Louise, *J. Macoun*, 3; Lake O'Hara, *J. Macoun*, 7; Papiston Creek, *J. Macoun*, 8.

British Columbia: Yoho Valley, *J. Macoun*, 5.

Washington: Mt. Paddo, *W. N. Suksdorf*, 843, 844.

Oregon: Sumpter, *G. G. Hedgcock*, comm. by *C. J. Humphrey*, 2570 (in Mo. Bot. Gard. Herb., 20460).

69. *S. subpileatum* Berk. & Curtis, Hooker's Jour. Bot. 1: 238. 1849; Grevillea 1: 163. 1873; Sacc. Syll. Fung. 6: 585. 1888; Masee, Linn. Soc. Bot. Jour. 27: 192. 1890; Long, Jour. Agr. Res. 5: 421. pl. 41. 1915. Plate 6, fig. 69.

Illustrations: Jour. Agr. Res. 5: pl. 41.

Type: in Curtis Herb. and Kew Herb.

Fructifications thick, corky, drying rigid, very hard, resupinate or effuso-reflexed, sometimes laterally confluent and attached by the umbos, with upper surface concentrically sulcate, somewhat zonate, tomentose, cinnamon-brown, the margin entire; hymenium even, light buff; in structure 800–1200  $\mu$  thick, with the intermediate layer bordered and connected with the tomentum by a denser and darker crust and bearing on the opposite side a hymenial layer which becomes multizonate; hyphae of intermediate layer colored, thick-walled, stiff, 3–3½  $\mu$  in diameter, densely and longitudinally arranged; cystidia incrustated, cylindric, 30–36  $\times$  7  $\mu$ , becoming colored where buried in older zones of the hymenium, at first sometimes slightly aculeate; spores hyaline, even, 4–5  $\times$  3  $\mu$ .

Fructifications with reflexed portion 1–6 cm. broad.

Perennial on logs of several species of *Quercus* causing a pock-

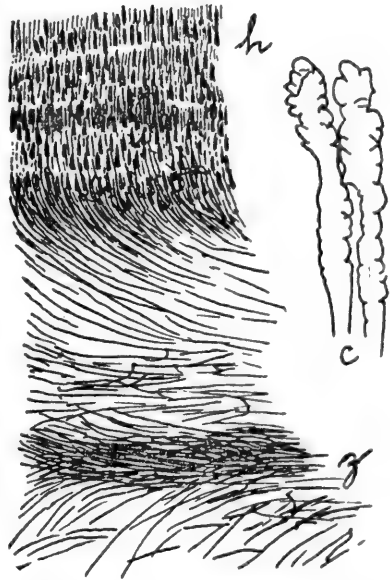


Fig. 40. *S. subpileatum*. Section  $\times$  68; hymenium, *h*, crust-like zone, *z*, cystidia of type, *c*,  $\times$  488.

eted or honeycomb heart rot. North Carolina and Ohio to Mexico, and in Cuba.

In general aspect *S. subpileatum* is not distinguishable from *S. sepium* and *S. insigne*; it is more commonly met with than these latter species and with them occurs on oak logs, is also tobacco-colored and sulcate above and has a whitish hymenium which differs from the other species of this group by containing cylindric, incrusted cystidia and only very rarely an occasional paraphysis with its outer portion of bottle-brush or aculeate form. Usually such paraphyses are not found in preparations of the hymenium of this species. Occasionally preparations may show young cystidia which are merely rough above or somewhat aculeate. One must not confuse *S. subpileatum* with the other species which have numerous and conspicuous bottle-brush paraphyses.

Specimens examined:

Exsiccati: Ell. & Ev., Fungi Col., 917; Ravenel, Fungi Am., 219;

Ravenel, Fungi Car. 1: 30; Smith, Cent. Am. Fungi, 146.

North Carolina: Blowing Rock, *G. F. Atkinson*, 4183.

South Carolina: Santee, *H. W. Ravenel*, type (in Curtis Herb., 1007); Society Hill (in Curtis Herb., 1062).

Georgia: Vienna, *C. J. Humphrey*, 5228.

Florida: *W. W. Calkins* (in U. S. Dept. Agr. Herb., Burt Herb., N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 56759), and in Ell. & Ev., Fungi Col., 917.

Alabama: Auburn, *F. S. Earle* & *C. F. Baker* (in Burt Herb. and Mo. Bot. Gard. Herb., 5110); Montgomery Co., *R. P. Burke*, 31 (in Mo. Bot. Gard. Herb., 17137).

Louisiana: St. Martinville, *A. B. Langlois*.

Ohio: *A. P. Morgan* (in Lloyd Herb., 2607).

Kentucky: Mammoth Cave, *C. G. Lloyd*, 2798.

Missouri: Columbia, *B. M. Duggar*, 550; Marianna, *H. von Schrenk* (in Burt Herb. and Mo. Bot. Gard. Herb., 42837); Wicks, *L. O. Overholts*, 3161 (in Mo. Bot. Gard. Herb., 5713).

Arkansas: *W. H. Long*, 12703, 18502 (in Mo. Bot. Gard. Herb., 44160, 44161).

Texas: Jasper, *E. R. Hodson*, 325, comm. by P. L. Ricker.

Mexico: Jalapa, *C. L. Smith*, in Smith, Cent. Am. Fungi, 146.

Cuba: *C. Wright*, 515, the *S. scytale* of *Fungi Cubenses* but not according to the type (in *Curtis Herb.*).

**70. *S. sepium* Burt, n. sp.**

Plate 6, fig. 70.

Type in Burt Herb.

Fructification corky, drying rigid, hard, resupinate, becoming broadly reflexed, with the upper surface concentrically sulcate, somewhat zonate, tomentose, sepia, the margin paler and entire; hymenium even, not shining, between light buff and avellaneous; in structure 600–1500  $\mu$  thick—up to 3 mm. thick in resupinate portion of Mexican specimens—, with the intermediate layer bordered and connected with the tomentum by a denser and darker zone and bearing on the opposite side a hymenial layer which becomes multizonate; hyphae of intermediate layer colored, thick-walled, densely and horizontally arranged, 3–3½  $\mu$  in diameter; cystidia incrusted, cylindric, 25–35  $\times$  7  $\mu$ , becoming colored where buried in the deeper zones of the hymenium; paraphyses of bottle-brush or aculeate form, numerous and conspicuous in the hymenial surface, cylindric, 12–25  $\times$  3–5  $\mu$ ; spores hyaline, even, 4  $\times$  2½  $\mu$ .

Probably resupinate over large areas, for fragments fractured on three sides are 6 cm. square; reflexed margin 2–4 cm. long, 6 cm. wide.

Under side of rotten logs of frondose species. Pennsylvania to Mexico and Colombia. Collected from July to December but probably perennial.

The few collections of *S. sepium* which have been observed have the upper surface of the pileus a little brighter colored than that of *S. subpileatum* and the hymenium more avellaneous, but I cannot certainly separate the former from the latter except by the very numerous and conspicuous bottle-brush paraphyses which are present, in addition to cystidia, in the hymenium of

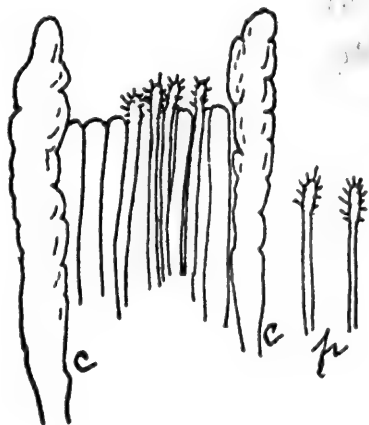


Fig. 41. *S. sepium*. Hymenium of type  $\times$  665, showing cystidia, *c*, and bottle-brush paraphyses, *p*.

*S. sepium*. The specimens of Mexican collections cited below have larger size than those from the United States.

Specimens examined:

Exsiccati: Ellis, N. Am. Fungi, 1205, under the name *Stereum subpileatum*.

Pennsylvania: West Chester, *Everhart & Haines*, in Ellis, N. Am. Fungi, 1205.

North Carolina: Blowing Rock, *G. F. Atkinson*.

South Carolina: Clemson College, *P. H. Rolfs*, 1632.

Georgia: Vienna, *C. J. Humphrey*, 5229, type.

Mexico: Jalapa, *W. A. & E. L. Murrill*, 117, 188, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 11011, 54445), and 39 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56760).

Colombia: Bonda, *C. F. Baker*, 24, in Plants of Santa Marta, Colombia, under the name *Stereum illudens*.

**71. *S. albobadium*** (Schw.) Fries, *Epier.* 551. 1838; Morgan, *Cincinnati Soc. Nat. Hist. Jour.* 10: 195. 1888; *Sacc. Syll. Fung.* 6: 579. 1888; Masee, *Linn. Soc. Bot. Jour.* 27: 194. 1890. Plate 6, fig. 71.

*Thelephora albobadia* Schweinitz, *Naturforsch. Ges. Leipzig Schrift.* 1: 108. 1822 (in *C. Corticia*); *Am. Phil. Soc. Trans.* N. S. 4: 167. 1832; Fries, *Elenchus Fung.* 1: 189. 1828.—*T. albo-marginata* Schweinitz in Berkeley, *Hooker's London Jour. Bot.* 6: 324. 1847; *Lea's Cat. Plants Cincinnati*, 66. 1849; *Sacc. Syll. Fung.* 6: 539. 1888.—*Peniophora albo-marginata* (Schw.) Masee, *Linn. Soc. Bot. Jour.* 25: 144. 1889.—*Stereum bizonatum* Berkeley & Curtis, *Grevillea* 1: 163. 1873; *Sacc. Syll. Fung.* 6: 582. 1888; Masee, *Linn. Soc. Bot. Jour.* 27: 178. 1890.—*S. Coffearum* Berkeley & Curtis, *Linn. Soc. Bot. Jour.* 10: 332. 1868; *Sacc. Syll. Fung.* 6: 576. 1888.—*Hymenochaete paupercula* Berkeley & Curtis, *Linn. Soc. Bot. Jour.* 10: 334. 1868.—*Peniophora paupercula* (Berk. & Curtis) Cooke, *Grevillea* 8: 150. 1880; *Sacc. Syll. Fung.* 6: 645. 1888.

Type: I was unable to find the type in Herb. Schweinitz, although it was studied by Berkeley & Curtis, *Acad. Nat. Sci. Phila. Jour.* 3: 221. 1856.

Fructifications coriaceous, thin, at first resupinate, orbicular,

becoming confluent, sometimes becoming narrowly reflexed, with the upper surface villose, varying from buffy brown to Natal-brown, becoming somewhat zonate when reflexed about 5 mm., the margin entire and usually whitish; hymenium even, somewhat velvety, bistre or snuff-brown, becoming light drab and somewhat pruinose with age; in structure about  $500\ \mu$  thick, the intermediate layer with a darker zone on its upper side and composed of loosely, longitudinally arranged, slightly colored hyphae  $3-3\frac{1}{2}\ \mu$  in diameter; hymenium  $30-45\ \mu$  thick, not zonate, having incrusted cystidia  $30-45 \times 8-15\ \mu$  all confined to the single-layered hymenium, protruding up to  $25\ \mu$ ; branched, filiform paraphyses  $2\ \mu$  in diameter, becoming colored, are present also in the hymenium, basidia simple, 4-spored; spores white in spore collection, even, flattened on one side,  $6-11 \times 3-4\frac{1}{2}\ \mu$ .

Fructifications 5-10 mm. in diameter, becoming confluent over areas 1-2 cm. wide and 3 to many cm. long, and reflexed 2-5 mm.

On dead frondose wood and fallen limbs. New York to Mexico and westward to Idaho and Arizona, in the West Indies, and reported from Brazil. Throughout the year. Common.

*S. albobadium* may usually be recognized by its brown, velvety hymenium with a white border; with age the hymenium tends to become more uniformly light drab or pruinose, but some small fructifications in the vicinity are likely to show the original color contrasts. This species has a wide geographic range and is somewhat variable in coloration but is very constant in microscopic structure; the branched, colored paraphyses are highly distinctive.

Specimens examined:

Exsiccati: Bartholomew, Fungi Col., 3688, 4784; Ellis, N. Am.

Fungi, 15; Ravenel, Fungi Am., 221, 449; Ravenel, Fungi

Car. 1: 29.

New York: Grand View, *H. von Schrenk* (in Mo. Bot. Gard.

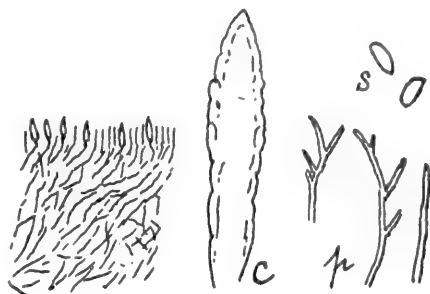


Fig. 42. *S. albobadium*. Section  $\times 90$ ; cystidium, c, paraphyses, p, and spores, s,  $\times 665$ .

- Herb., 43009); Orient, *R. Latham* (in Mo. Bot. Gard. Herb., 16267).
- New Jersey: Newfield, *J. B. Ellis*, in *Ellis*, N. Am. Fungi, 15.
- Maryland: Plummers Island, *C. L. Shear*, 1276, 1277; Seven Locks, *P. L. Ricker*, 1007; Takoma Park, *C. L. Shear*, 1118, 1126.
- District of Columbia: Washington, *C. L. Shear*, 1263-1265, 1402.
- Virginia: Arlington Cemetery, *W. H. Long*, 12978 (in Mo. Bot. Gard. Herb., 55104).
- North Carolina: Chapel Hill, *W. C. Coker*, 3849 (in Mo. Bot. Gard. Herb., 56672).
- South Carolina: Curtis Herb., 1924, type of *Stereum bizonatum* (in Kew Herb.); *Ravenel*, in *Ravenel*, Fungi Car. 1: 29; Aiken, *H. W. Ravenel*, in *Ravenel*, Fungi Am., 449; Clemson College, *P. H. Rolfs*, 1637; Society Hill, under the name *T. albo-marginata* (in Curtis Herb.).
- Georgia: Atlanta, *E. Bartholomew*, in *Bartholomew*, Fungi Col., 4784; Darien, *H. W. Ravenel*, in *Ravenel*, Fungi Am., 221.
- Florida: New Smyrna, *C. G. Lloyd*, 2089, 2104, 2132.
- Alabama: Auburn, *F. S. Earle* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56764), *F. S. Earle & C. F. Baker* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 5055, 56765, 56772), *C. R. Hudson* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 55568); *McGeher* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56766), and *L. M. Underwood*, comm. by U. S. Dept. Agr.; Fayette Co., *P. V. Siggers*, comm. by A. H. W. Povah, 16 (in Mo. Bot. Gard. Herb., 14849); Mobile, *E. Bartholomew*, 5752 (in Mo. Bot. Gard. Herb., 44257); Montgomery, *R. P. Burke*, 5, 29 (in Mo. Bot. Gard. Herb., 20914, 17071).
- Mississippi: Ocean Springs, *F. S. Earle*, 181 (in Mo. Bot. Gard. Herb., 44311).
- Louisiana: St. Martinville, *A. B. Langlois*.
- Texas: Paris, *C. L. Shear*, 1234; Quitman, *W. H. Long*, 18448, 12081 (in Mo. Bot. Gard. Herb., 55105, 55131); San Antonio, *H. von Schrenk*, also *W. H. Long*, 21217 (in Mo. Bot. Gard. Herb., 42577 and 55131 respectively).
- Ohio: *C. G. Lloyd*, 189, 594 (in *Lloyd Herb.*); College Hill, *C. G. Lloyd*, *P*; Norwood, *C. G. Lloyd*, 2810.

- Missouri: Meramec, *P. Spaulding* (in Mo. Bot. Gard. Herb., 5017); Perryville, *L. O. Overholts & R. A. Studhalter*, comm. by *L. O. Overholts*, 2723 (in Mo. Bot. Gard. Herb., 44293); Upper Creve Coeur, *E. A. Burt* (in Mo. Bot. Gard. Herb., 54861, 56768).
- Kansas: Rooks Co., *E. Bartholomew* (in Burt Herb. and Mo. Bot. Gard. Herb., 5054); Stockton, *E. Bartholomew*, in Bartholomew, Fungi Col., 3688.
- Idaho: Bonner's Ferry, *J. R. Weir*, 592 (in Mo. Bot. Gard. Herb., 36746).
- Arizona: Phoenix, *W. H. Long*, 19030 (in Mo. Bot. Gard. Herb., 55106).
- New Mexico: Cienega Springs, *W. H. Long*, 21525 (in Mo. Bot. Gard. Herb., 55155); Tyom Experiment Station, *W. H. Long*, 21364, 21408 (in Mo. Bot. Gard. Herb., 55107, 55108); Tejano Experiment Station, *W. H. Long*, 21889, 21897, 21902 (in Mo. Bot. Gard. Herb., 55165–55167).
- Bermuda: *S. Brown, N. L. Britton, & F. J. Seaver*, 1244 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56273).
- Cuba: *C. Wright*, 247, type of *Stereum Coffearum* (in Curtis Herb.), and 542, type of *Hymenochaete paupercula* (in Curtis Herb.), and *C. G. Lloyd*, 423 (in Mo. Bot. Gard. Herb., 55159); Alto Cedro, *L. M. Underwood & F. S. Earle*, 1492, 1590, comm. by N. Y. Bot. Gard. Herb.; La Gloria, Camaguey, *J. A. Shafer*, 740 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56770); Managua, *Earle & Murrill*, 11, comm. by N. Y. Bot. Gard. Herb.; Omaja, *C. J. Humphrey*, 2746 (in Mo. Bot. Gard. Herb., 14385); San Diego de los Baños, *Earle & Murrill*, 281, 302, 316, 353, comm. by N. Y. Bot. Gard. Herb.
- Porto Rico: Rio Piedras, *J. A. Stevenson*, 2424, 6272 (in Mo. Bot. Gard. Herb., 3607, 55090).
- Mexico: Jalapa, *W. A. & E. L. Murrill*, 301, 309, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54432, 54483); Motzorongo, Cordoba, *W. A. & E. L. Murrill*, 992, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54597); Orizaba, *W. A. & E. L. Murrill*, 760, 761, 766, 769, 774, 779, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54627, 54631, 54628, 54629, 54610,

54645); Tepeite Valley, Guernavaca, W. A. & E. L. Murrill, 408, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54544); Xuchiles, Cordoba, W. A. & E. L. Murrill, 1209, 1210, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54598, 54599).

**72. *S. heterosporum* Burt, n. sp.**

Plate 6, fig. 72.

Type: in Mo. Bot. Gard. Herb.

Fructifications coriaceous, thin, resupinate, orbicular, becoming confluent, sometimes reflexed, with the upper surface villose, bister, somewhat concentrically sulcate and zonate, the margin entire, whitish; hymenium even, somewhat velvety, bister, becoming light drab and somewhat pruinose in the center with age; in structure 300–500  $\mu$  thick, the intermediate layer with a darker zone on its upper side and composed of loosely and longitudinally arranged, slightly colored hyphae 3–3½  $\mu$  in diameter, many of

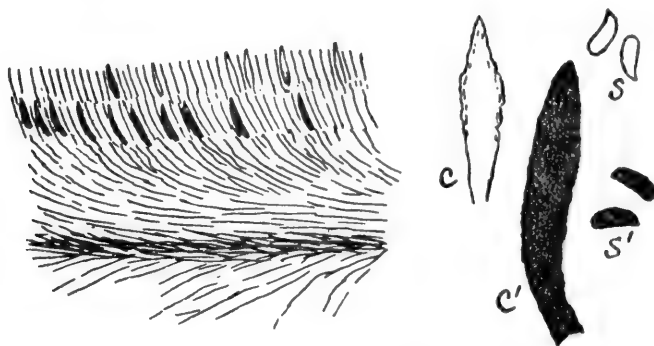


Fig. 43. *S. heterosporum*. Section  $\times 90$ ; hyaline cystidium, *c*, colored cystidium, *c'*, hyaline spores, *s*, colored spores *s'*,  $\times 665$ .

which curve into the hymenium and often become there as dark-colored as conducting organs and sometimes incrustated; hymenium 70–120  $\mu$  thick, becoming more or less zonate, with cystidia incrustated starting from all parts of the layer, 30–35  $\times$  6–7  $\mu$ , protruding up to 15  $\mu$ , often colored under the incrustation in the deeper layers of the hymenium; paraphyses filiform, 2  $\mu$  in diameter, branched, numerous at the surface of the hymenium; basidiospores hyaline, even, 8–9  $\times$  3½  $\mu$ , borne 4 to a basidium; ochraceous spores of the same form and dimensions as the basidiospores often occur copiously imbedded throughout the hymenium.

Fructifications 5–10 mm. in diameter, becoming confluent over areas 1–2 cm. wide and up to 12 cm. long, and reflexed 2–7 mm.

On wood and in crevices of the bark of dead limbs and logs of *Eucalyptus*, oak, pecan, and other frondose species. Oregon to Mexico. September to April.

Resupinate specimens of *S. heterosporum* are not distinguishable in aspect from the darkest colored specimens of *S. albobadium*; all specimens of the former which have been seen so far have been bister or seal-brown, which is also the color of the upper side of the pileus. Mature specimens of *S. heterosporum* differ from those of *S. albobadium* in the much thicker zonate hymenium which has cystidia in all parts of this layer and many wholly buried below the surface; the deeper region of the hymenium is dark-colored in the type because of the abundance of dark-colored hyphal ends which are occasionally incrustated, and colored imbedded spores are as numerous as in *Stereum rugisporum*, which has nearly the same geographic range. I have not found colored imbedded spores in the collection distributed in Ell. & Ev., Fungi Col., 1116, which I refer to *S. heterosporum* on account of other distinctive characters of this species.

Specimens examined:

Exsiccati: Ell. & Ev., Fungi Col., 1116, under the name *Stereum albobadium*.

Oregon: Portland, C. J. Humphrey, 6125.

California: Berkeley, C. J. Humphrey, 5981; Campo Mts., C. R. Orcutt, 2007, 2008, comm. by U. S. Dept. Agr. Herb.; Compton, A. J. McClatchie, in Ell. & Ev., Fungi Col., 1116, and (in N. Y. Bot. Gard. Herb., Burt Herb., and Mo. Bot. Gard. Herb., 56769); Claremont, D. L. Crawford, 1513, comm. by L. O. Overholts, 3325 (in Mo. Bot. Gard. Herb., 21688); Santa Cruz, Dr. Anderson, comm. by W. G. Farlow.

Arizona: Coronado National Forest, G. G. Hedgcock & W. H. Long, comm. by C. G. Humphrey, 2562, 2563 (in Mo. Bot. Gard. Herb., 13070, 12811).

Mexico: Parral, Chihuahua, E. O. Matthews, 3, and 27, type (in Mo. Bot. Gard. Herb., 44282, 44420, 44106); Rosario, E. O. Matthews (in Mo. Bot. Gard. Herb., 44110).

**73. *S. versiforme*** Berk. & Curtis, *Grevillea* 1: 164. 1873; Sacc. Syll. Fung. 6: 580. 1888; Masee, Linn. Soc. Bot. Jour. 27: 193. 1890. Plate 6, fig. 73.

*Peniophora Ellisii* Masee, Linn. Soc. Bot. Jour. 25: 144. 1889; Sacc. Syll. Fung. 9: 237. 1891.—An *Thelephora obscura* Persoon, Myc. Eur. 1: 146. 1822 (in \*\*\*\* *Corticium*)? See *Peniophora obscura* (Pers.) Bresadola, I. R. Accad. Agiati Atti III. 3: 113. 1897.

Type: in Kew Herb. and Curtis Herb.

Fructifications at first thin, effused, resupinate, adnate, orbicular, becoming confluent, finally thickening, cracking, and



Fig. 44. *S. versiforme*. Cystidium, c, and paraphyses, p,  $\times 665$ .

becoming narrowly reflexed and somewhat complicate and curling away from the substratum, the upper side uneven, plicate, somewhat fuscous or blackish; hymenium velvety, Prout's brown to bister, somewhat papillate; in structure 200–400  $\mu$  thick, composed of densely arranged, ascending and interwoven hyphae, some of which are colored; hymenium usually simple but sometimes with one or two additional zones in some places, containing heavily incrustated, cylindric cystidia 45–75  $\times$  12–24  $\mu$ , starting in various parts of the hymenium and subhyme-

nium, wholly buried below the surface of the hymenium or emerging up to 15  $\mu$ ; hymenial surface velvety, with very numerous colored paraphyses with bushy-branched tips; spores hyaline, even, curved, 5–7  $\times$  2–3  $\mu$ .

Fructifications 2–10 mm. in diameter, confluent over areas up to 7  $\times$  1–2 cm.; margin reflexed about 1 mm. usually, rarely up to 2 mm.

On the bark of dead limbs of oak, chestnut, birch, and other frondose species. Canada to Alabama and westward to Iowa and Arkansas. July to February. Common.

*S. versiforme* is distinct among the *Stereums* by its Prout's brown, velvety, or at least dull, hymenium, barely reflexed margin, and colored, bushy-branched paraphyses, among which are scattered large, incrustated cystidia. The presence of these

paraphyses, the location of the cystidia in the hymenial side of the fructification, and the velvety surface sharply separate wholly resupinate specimens of *S. versiforme* from brownish colored forms of *Peniophora cinerea*.

*Peniophora obscura* (Pers.) Bresadola, according to specimen collected in Hungary, communicated to me by Bresadola and compared by him with an authentic specimen of Persoon, is strikingly similar to very young and wholly resupinate specimens of *Stereum versiforme*. There is no European record that *P. obscura* ever has been observed reflexed or has shown any tendency to become reflexed. In America, *S. versiforme* is wholly resupinate only when very young and soon thickens, becomes more or less reflexed, and in well-developed specimens such as that cited below, collected by Underwood at White Plains, N. Y., has but little in common with *P. obscura*. For these reasons I believe that the name *Stereum versiforme* should be applied to American specimens until Europeans find their *Peniophora obscura* in a reflexed stage identical in its characters with *S. versiforme*.

Specimens examined:

Exsiccati: Ellis, N. Am. Fungi, 606, under the name *Stereum papyrinum*; Ell. & Ev., N. Am. Fungi, 3209; Ell. & Ev., Fungi Col., 611; de Thümen, Myc. Univ., 307.

Canada: J. Macoun, 8 in part, 70; on peach tree, J. H. Faull (in Mo. Bot. Gard. Herb., 55561).

Quebec: Hylmer, J. Macoun, 229.

Ontario: York Mills, J. H. Faull, Univ. Toronto Herb., 322 in part (in Mo. Bot. Gard. Herb., 44933).

New Hampshire: Chocorua, W. G. Farlow (in Mo. Bot. Gard. Herb., 55586).

Vermont: Ripton, E. A. Burt.

Massachusetts: Arlington Heights, E. A. Burt; Sharon, A. P. D. Piguet, comm. by W. G. Farlow (in Mo. Bot. Gard. Herb., 55231); Waverly, A. B. Seymour, T 15 (in Mo. Bot. Gard. Herb., 18098).

New York: Alcove, C. L. Shear, 1139, 1304, 1328; East Galway, E. A. Burt; Grand View, H. von Schrenk (in Mo. Bot. Gard. Herb., 42807); Ithaca, Van Hook, comm. by G. F. Atkinson, 8217; Karner, H. D. House (in N. Y. State Mus. Herb.

- and Mo. Bot. Gard. Herb., 54354, 54366); White Plains, *L. M. Underwood* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 5031).
- New Jersey: Newfield, *J. B. Ellis*, comm. by C. G. Lloyd, and in Ellis, N. Am. Fungi, 606, Ell. & Ev., N. Am. Fungi, 3209, Fungi Col., 611, and de Thümen, Myc. Univ., 307.
- Pennsylvania: *Michener*, type (in Curtis Herb., 4265, and in Kew Herb.); Bethlehem, *Schweinitz* (in Herb. Schweinitz, under the name *Thelephora amphibola* of Schw., Syn. N. Am. Fungi, No. 726, but not of Fries); Carbondale, *E. A. Burt*, two collections; State College, *C. R. Orton & L. O. Overholts*, comm. by L. O. Overholts, 2661 (in Mo. Bot. Gard. Herb., 11419); Trexlertown, *W. Herbst*, 14.
- Maryland: Glen Sligo, *C. L. Shear*, 1050, 1095; Hyattsville, *F. L. Scribner*, 90, comm. by U. S. Dept. Agr. Herb.; Takoma Park, *C. L. Shear*, 1020, 1336.
- Virginia: Fairfax, comm. by U. S. Dept. Agr. Herb.; Woodstock, *C. L. Shear*, 1196.
- South Carolina: Salem, *Schweinitz* (in Herb. Schweinitz, under the name *Thelephora bufonia* of Schw., Syn. N. Am. Fungi, No. 725, but probably not *T. bufonia* Pers., which is too imperfectly known for recognition in Europe); Summer-ville, *C. L. Shear*, 1227.
- Alabama: Auburn, *F. S. Earle* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56785, 56786), and *F. S. Earle & C. F. Baker* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56787, 56788).
- Michigan: Ann Arbor, *C. H. Kauffman*, 21 (in Mo. Bot. Gard. Herb., 9808), and *Abrams* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 56789).
- Iowa: Woodbine, *C. J. Humphrey & C. W. Edgerton*, comm. by C. J. Humphrey, 6518 (in Mo. Bot. Gard. Herb., 20624).
- Missouri: Concordia, *C. H. Demetrio* (in Mo. Bot. Gard. Herb., 5030); Oran, *H. von Schrenk* (in Mo. Bot. Gard. Herb., 42887); St. Louis, *E. A. Burt* (in Mo. Bot. Gard. Herb., 8725); Williams-ville, *B. M. Duggar*, 478, 481.
- Arkansas: Bigflat, *W. H. Long*, 19783, 19898 (in Mo. Bot. Gard. Herb., 5921, 9138); Cass, *W. H. Long*, 19800, 19827 (in Mo. Bot. Gard. Herb., 8636, 8886); Womble, *W. H. Long*,

19768, 19873, 19881 (in Mo. Bot. Gard. Herb., 9143, 8964, 5920).

**74. *S. insigne*** Bresadola, Nuov. Gior. Bot. Ital. **23**: 158. 1891; Sacc. Syll. Fung. **9**: 222. 1891. Plate 6, fig. 74.

Type: authentic specimen, probably part of the type, in Burt Herb.

Fructification corky, drying rigid, hard, effuso-reflexed, the upper surface concentrically sulcate, somewhat zonate, tomentose, snuff-brown to bister, the recent growth at the margin paler; hymenium even, pinkish buff to drab-gray and pruinose; in structure 1500  $\mu$  thick, with the intermediate layer bordered and connected with the tomentum by a darker and denser zone and bearing on the opposite side a multizonate hymenium; hyphae of the intermediate layer colored, thick-walled, densely and longitudinally arranged,  $3\frac{1}{2}$   $\mu$  in diameter; no cystidia; paraphyses of bottle-brush or aculeate form, numerous and conspicuous in the hymenial surface, cylindric,  $25-30 \times 4-4\frac{1}{2}$   $\mu$ ; spores published by Bresadola as hyaline, even,  $4-6 \times 3-3\frac{1}{2}$   $\mu$ —none found by me.

Reflexed  $1\frac{1}{2}-4$  cm., laterally confluent for 9 cm. in the Florida specimen.

On oak logs. Florida, Venezuela, and Italy. February. Rare.

This species belongs in the group with *S. subpileatum* and *S. sepium* and is not distinguishable in general aspect from these species, but its hymenium contains numerous and conspicuous bottle-brush paraphyses and no cystidia, while both of the other species named have cystidia. The Venezuelan specimen cited below was determined by Berkeley as *Stereum illudens*, from which it appears distinct, for while the type of *S. illudens*, in Kew Herbarium, collected by Drummond, 158, Swan River, Australia, has bottle-brush paraphyses for its hymenial surface, it has in its subhymenium elongated, cylindric, thick-walled organs 6  $\mu$  in diameter, up to 100  $\mu$  long, a little darker colored than the surrounding hyphae and curving outward into the deeper portion of the hymenium, which is not zonate.



Fig. 45. *S. insigne*. Section of hymenium of authentic specimen  $\times 665$ ; bottle-brush paraphyses, *p*.

## Specimens examined:

Italy: Florence, *Martelli*, comm. by G. Bresadola.

Florida: *C. G. Lloyd*, 4846.

Venezuela: *Fendler*, 177 (in Curtis Herb.).

**75. *S. durum*** Burt, n. sp. *Stadium 179* Plate 6, fig. 75.

Type: in Smith, Central Am. Fungi, 147, copy in Mo. Bot. Gard. Herb.

Fructification very hard, orbicular, attached by the center, free or reflexed all around, concentrically sulcate, fuscous to

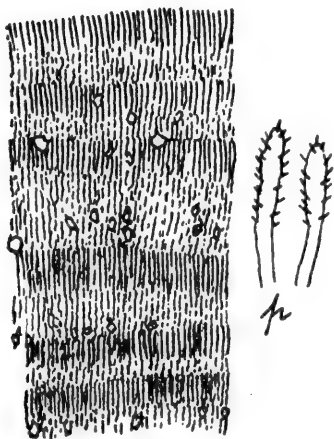


Fig. 46. *S. durum*. Section of hymenial region of type  $\times 90$ ; bottle-brush paraphyses, *p*,  $\times 665$ .

bone-brown, with a horn-like crust, becoming somewhat shining; hymenium even, not shining, between pale drab-gray and tiller-buff, somewhat pruinose; in structure 2–3 mm. thick, hazel throughout, and multizonate or stratose, containing many scattered crystals, hyphae  $3\frac{1}{2}$ –4  $\mu$  in diameter; paraphyses of bottle-brush or aculeate form, numerous and conspicuous in the hymenial surface, cylindric, 12–15  $\times$  4–5  $\mu$ ; no cystidia; no spores found.

Fructification 3 cm. in diameter, reflexed 1 cm.

On dead wood. Mexico.

*S. durum* is much thicker, harder, and more rigid than *S. insigne* and

not tomentose. The microscopic structure agrees exactly with that of preparations from an authentic specimen in Kew Herbarium of *Stereum annosum*, No. 99, collected at Neilgherries, Ceylon, and should be compared with the latter when better known. For the present the development of a pileus by *S. durum*, with characters as stated, is reason for regarding this species as distinct from *S. annosum*, a resupinate species of the other side of the world.

## Specimens examined:

Exsiccati: Smith, Central Am. Fungi, 147, under the name *Stereum ferreum*.

Mexico: Jalapa, *C. L. Smith*, type, in Smith, Central Am. Fungi, 147.

**76. *S. frustulosum*** (Pers.) Fries, *Epier.* 552. 1838; *Hym. Eur.* 643. 1874; Morgan, *Cincinnati Soc. Nat. Hist. Jour.* 10: 196. 1888; Sacc. *Syll. Fung.* 6: 572. 1888; Massee, *Linn. Soc. Bot. Jour.* 27: 199. 1890. Plate 6, fig. 76.

*Thelephora frustulosa* Persoon, *Syn. Fung.* 577. 1801; *Myc. Eur.* 1: 134. 1822; Fries, *Syst. Myc.* 1: 445. 1821.—*Thelephora perdix* Hartig, *Zersetzung. des Holzes*, 103–108. *pl.* 13. 1878.

Illustrations: Cooke, *Fung. Pests*, *pl.* 20. *f.* 20; Hartig, *loc. cit.*; Massee, *Dis. Cult. Plants*, 397. *text f.* 124; Tubeuf, *Dis. of Plants*, 35. *text f.* 11, and 430. *text f.* 260, 261.

Fructifications woody, resupinate, tuberculose, crowded as if confluent and then broken up into frustules, sometimes grown outward from place of attachment and narrowly reflexed or with a free margin all around, the upper side black, crust-like,

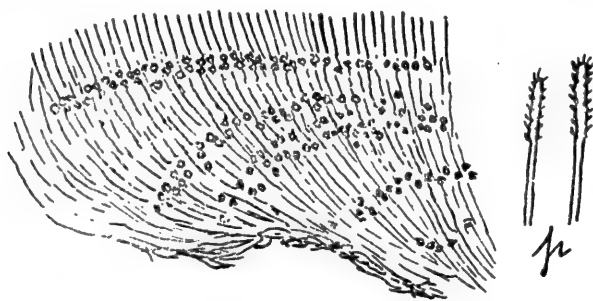


Fig. 47. *S. frustulosum*. Section  $\times 45$ ; bottle-brush paraphyses, *p*,  $\times 665$ .

concentrically sulcate, glabrous; hymenium convex, pinkish buff to whitish and pruinose; in structure 800  $\mu$  or more thick, with hyphae densely arranged, radiating outward from the place of attachment and bearing a multizonate hymenium in which are great numbers of bottle-brush or aculeate paraphyses; spores hyaline, even,  $5-6 \times 3-3\frac{1}{2} \mu$ .

Fructifications 2–4 mm. in diameter; margin reflexed 3 mm. in the best developed specimen known to me.

On wood of oak logs and stumps in which it causes a pocketed or honey-comb rot. Canada to Texas and westward to Oregon, in Mexico and in Europe.

*S. frustulosum* may be recognized by its occurrence in small convex fructifications of woody consistency, crowded together

on the under side of dry and hard oak wood or on the sides of stumps. On the sides of stumps it may sometimes be found reflexed. The bottle-brush paraphyses and many-zoned hymenium are good structural characters for confirmation of the determination.

Specimens examined:

Exsiccati: Bartholomew, *Fungi Col.*, 1881, 4587; Ellis, *N. Am. Fungi*, 106; Ell. & Ev., *Fungi Col.*, 7; Ravenel, *Fungi Car.* 2: 34; de Thümen, *Myc. Univ.*, 308.

Sweden: Stockholm, *L. Romell*, 28; Upsala, *E. P. Fries* (in *Curtis Herb.*).

France: Aveyron, *A. Galzin*, 13935, comm. by H. Bourdot, 26649.

Ontario: Carleton Place, *J. Macoun*, 421 (in *Macoun Herb.*).

Vermont: Grand View Mt., *E. A. Burt*, three collections.

Massachusetts: Dedham, *Hanna*; Wellesley, *L. W. Riddle*, 14.

New York: Glasco, *P. Wilson*, 50 (in *Mo. Bot. Gard. Herb.*, 54763); Ithaca, *W. C. Muenscher*, 144 (in *Mo. Bot. Gard. Herb.*, 56601); Palisades, *P. Wilson*, 62 (in *Mo. Bot. Gard. Herb.*, 54761).

New Jersey: Alpine, *P. Wilson*, 8 (in *Mo. Bot. Gard. Herb.*, 54764); Englewood, *P. Wilson*, 60 (in *Mo. Bot. Gard. Herb.*, 54762); Hackensack Swamp, *W. H. Ballou* (in *Mo. Bot. Gard. Herb.*, 56599); Newfield, *J. B. Ellis*, in *Ellis, N. Am. Fungi*, 106, in *Ell. & Ev., Fungi Col.*, 7, and *de Thümen, Myc. Univ.*, 308.

Pennsylvania: Kittanning, *D. R. Sumstine*.

Maryland: Hyattsville, *F. L. Scribner* (in *U. S. Dept. Agr. Herb.*).

South Carolina: *H. W. Ravenel*, in *Ravenel, Fungi Car.* 2: 34; Clemson College, *P. H. Rolfs*, 1621, 1630, 1638.

Florida: Tallahassee, *E. Bartholomew*, in *Bartholomew, Fungi Col.*, 4587.

Alabama: Auburn, *F. S. Earle & C. F. Baker* (in *Mo. Bot. Gard. Herb.*, 5079); Montgomery, *R. P. Burke*, 27 (in *Mo. Bot. Gard. Herb.*, 17875).

Louisiana: *A. B. Langlois*.

Texas: Denton, *W. H. Long*, in *Bartholomew, Fungi Col.*, 1881; Galveston, *H. W. Ravenel*, 36, comm. by *U. S. Dept. Agr. Herb.*

- Ohio: *C. G. Lloyd*, 185 (in *Lloyd Herb.*); *Loveland*, *D. L. James* (in *U. S. Dept. Agr. Herb.*).
- West Virginia: Paw Paw, *C. L. Shear*, 1180.
- Kentucky: Crittenden, *C. G. Lloyd*, 1685.
- Wisconsin: Blue Mounds, *Miss A. O. Stucki*, 30; *Madison*, *W. Trelease*, 83 (in *Mo. Bot. Gard. Herb.*, 44105).
- Iowa: Webster Co., *O. M. Oleson*, 450 (in *Mo. Bot. Gard. Herb.*, 44062).
- Missouri: Columbia, *B. M. Duggar*, 443; *Creve Coeur*, *P. Spaulding* (in *Mo. Bot. Gard. Herb.*, 44103), and *E. A. Burt* (in *Mo. Bot. Gard. Herb.*, 7861); *St. Louis*, *Miss C. Rumbold*; *Valley Park*, *E. A. Burt* (in *Mo. Bot. Gard. Herb.*, 44058, 44063).
- Nebraska: Saltillo, *C. L. Shear*, 1051.
- Kansas: Bourbon Co., *A. O. Garrett*, 125.
- Oregon: Portland, *J. R. Weir*, 597 (in *Mo. Bot. Gard. Herb.*, 36747).
- Mexico: Tepeite Valley, *Guernavaca*, *W. A. & E. L. Murrill*, 411 (in *Mo. Bot. Gard. Herb.*, 54545).
- U. S. Northern Pacific Expl. Exp.: *Ousmia*, *C. Wright*, comm. by *U. S. Dept. Agr. Herb.*

**77. *S. roseo-carneum*** (Schw.) Fries, *R. Soc. Sci. Upsal. Actis* III. 1: 112. 1851. Plate 6, fig. 77.

*Thelephora roseo-carnea* Schweinitz, *Naturforsch. Ges. Leipzig Schrift.* 1: 107. 1822 (under *C. Corticia*).—*T. anthochroa* Schweinitz, *Am. Phil. Soc. Trans. N. S.* 4: 168. 1832, but not *T. anthochroa* of European authors.—*Corticium lilacino-fuscum* Berkeley & Curtis, *Grevillea* 1: 180. 1873; *Sacc. Syll. Fung.* 6: 621. 1888; *Massee, Linn. Soc. Bot. Jour.* 27: 143. 1890.—*Stereum lilacino-fuscum* (Berk. & Curtis) Lloyd, *Myc. Writ.* 5. Letter 68: 8. 1919.—*S. sendaiense* Lloyd, *Myc. Writ.* 5. *Myc. Notes* 48: 680. text f. 1015. 1917.—*Corticium subrepandum* Berkeley & Cooke, *Grevillea* 6: 81. 1878; *Sacc. Syll. Fung.* 6: 608. 1888; *Massee, Linn. Soc. Bot. Jour.* 27: 119. 1890.

Illustrations: Lloyd, *loc. cit.*

Type: in *Herb. Schweinitz*, under the name *Thelephora anthochroa*.

Fructifications coriaceous-soft, thin, usually resupinate, effused,

becoming confluent, sometimes with margin barely free, rarely distinctly reflexed, with the upper surface tomentose, light buff to pinkish buff, the margin entire; hymenium even, cracking in a tessellated manner, not shining, light vinaceous purple when young, gradually changing to avellaneous when mature; in

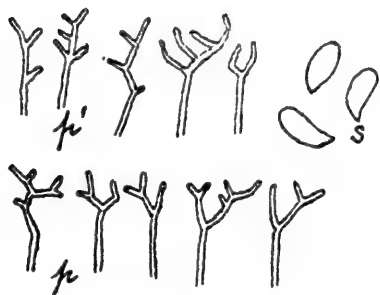


Fig. 48. *S. roseo-carneum*. Paraphyses of type, *p*; paraphyses, *p'*, of collection at Ithaca, and spores, *s*, all  $\times 665$ .

structure 250–300  $\mu$  thick, composed of somewhat longitudinally and loosely interwoven, hyaline, thin-walled, nodose-septate hyphae  $2\frac{1}{2}$ –3  $\mu$  in diameter, not differentiated into an intermediate layer with a dark or dense bordering zone; hymenial layer simple when young, with very numerous and conspicuous, filiform paraphyses, colored above and with short-branched tips or bearing short lateral prongs on from 5–20  $\mu$  of the outer portion of the paraphysis, the

paraphyses less conspicuous when basidia appear; spores white in spore collection, even, flattened on one side,  $6-9 \times 4-5$   $\mu$ , borne 4 to a basidium on simple basidia.

At first forming little fructifications  $3-5 \times 2$  mm., which become confluent over areas up to  $6 \times 1\frac{1}{2}$  cm.; margin becoming free or reflexed for 1–3 mm.

On fallen limbs of frondose species. Canada to North Carolina and westward to Wisconsin, and in Brazil and Japan.

Since *S. roseo-carneum* is nearly always resupinate and does not show in sectional preparations of such specimens a distinct intermediate layer, its inclusion in the genus *Stereum* must trouble beginners. Fortunately it is a species so unique in structure that it may be determined with confidence. Most collections are likely to show more or less of the fuscous-lilac color, which is intense in young stages; the hymenium cracks and has the aspect of *Corticium evolvens* in other features than color, although of different structure; sections of *S. roseo-carneum* show in the hymenial surface filiform paraphyses branched above, as shown in the text figure. Such paraphyses are present in only one of our *Corticiums*—*Corticium roseum*. It is regrettable that the Schweinitz type was relabeled by Dr.

Michener to conform to the name used by Schweinitz in 'Synopsis North American Fungi' and the original label removed from the specimen, but Schweinitz gives in the later publication the name which he originally used.

Specimens examined:

Exsiccati: Ellis, N. Am. Fungi, 515 and 20, the latter under the name *Corticium incarnatum*.

Ontario: London, J. Dearness, D945 k, reflexed specimen (in Mo. Bot. Gard. Herb., 14251).

New Hampshire: Chocorua, W. G. Farlow, reflexed specimen; North Conway, L. O. Overholts, 5032, 5161—the latter reflexed (in Mo. Bot. Gard. Herb., 56348, 56349).

Vermont: Middlebury, E. A. Burt, two collections, of which one is reflexed; Ripton, E. A. Burt.

Massachusetts: reflexed specimen, comm. by C. H. Peck; Arlington Heights, reflexed specimen, E. A. Burt; Sharon, A. P. D. Piguet, comm. by W. G. Farlow.

Connecticut: C. Wright, type of *Corticium lilacino-fuscum* (in Kew Herb. and Curtis Herb., 5610).

New York: Alcove, C. L. Shear, 1001, 1002, 1004, 1072, 1321; Altamont, reflexed specimen, E. A. Burt; Brookton, W. C. Muenscher, 215 (in Mo. Bot. Gard. Herb., 56612)

Cayuga Lake basin, G. F. Atkinson, 3022; East Galway, E. A. Burt; Ithaca, Van Hook, and H. S. Jackson, comm. by G. F. Atkinson, 8247 and 14396 respectively; North Elba, C. H. Kauffman, 13 (in Mo. Bot. Gard. Herb., 16987).

New Jersey: Newfield, J. B. Ellis, 2487, type of *Corticium subrepandum* (in Kew Herb.), and in Ellis, N. Am. Fungi, 20, and 515.

Pennsylvania: Spruce Creek, J. H. Faull, Univ. Toronto Herb., 312 (in Mo. Bot. Gard. Herb., 44886); State College, L. O. Overholts, 2676 (in Mo. Bot. Gard. Herb., 5946), and L. O. Overholts & C. R. Orton, comm. by L. O. Overholts, 5041, reflexed specimen (in Mo. Bot. Gard. Herb., 56359).

District of Columbia: Rock Creek, C. L. Shear, 1352; Washington, T. Pergande (in U. S. Dept. Agr. Herb.).

Virginia: Woodstock, C. L. Shear, 786, 788.

North Carolina: Salem, Schweinitz, type, under the name *Thelephora anthochroa* (in Herb. Schweinitz).

West Virginia: Fayette Co., *L. W. Nuttall*, comm. by Lloyd. Herb.

Michigan: Ann Arbor, *C. H. Kauffman*, 13.

Indiana: Crawfordsville, *D. Reddick*, 9, 10.

Wisconsin: Palmyra, *Miss A. O. Stucki*, 48.

Brazil: Rio Grande do Sul, Hamburgerberg, *G. O. Malme*, 75, comm. by L. Romell, 330.

Japan: A. *Yasuda*, comm. by C. G. Lloyd (in Mo. Bot. Gard. Herb., 55214), and part of type of *Stereum sendaiense* (in Mo. Bot. Gard. Herb., 55448); Sendai, A. *Yasuda*, reflexed specimen (in Mo. Bot. Gard. Herb., 56247).

#### SPECIES IMPERFECTLY KNOWN

***Thelephora aculeata*** Berk. & Curtis, *Grevillea* 1: 149. 1873; Sacc. Syll. Fung. 6: 523. 1888.

The type was collected on the ground in Santee Swamp, South Carolina, in June. I had compared with the type a collection made by Professor P. H. Rolfs, on the ground, Clemson College, South Carolina, on June 18, and found this collection so similar to the type in aspect, although smaller, that I referred this specimen to *Thelephora aculeata*. I had not been able to demonstrate basidia for the type nor for the Rolfs specimen; now while working out the detailed structure of the latter specimen for publication, I find globose, longitudinally septate basidia  $9\ \mu$  in diameter, and hyaline, even spores up to  $9 \times 4\frac{1}{2}$ – $5\ \mu$ . It seems probable that when there is opportunity to examine the type again it may be found to have similar basidia and belong in *Tremellodendron*.

***Stereum arenicolum*** Berkeley in Masee, Linn. Soc. Bot. Jour. 27: 201. 1890.

"Resupinatum, effusum, crassum, rigidum, subtus tomento ferrugineo molli vestitum; hymenio levi, glabro fusco-purpurascens; sporae ellipsoideae,  $7 \times 4$ – $5\ \mu$  (Berk. in Herb. n. 3822).

"On sand under trees, Vera Cruz.

"Rigid, thick, 2–3 inches across, attached to the sand and probably decayed wood by a dense ferruginous tomentum; margin sometimes slightly upraised; substance pale cinnamon."

The above should be compared with *S. crassum*.

**Stereum cuneatum** Lloyd, Myc. Writ. 4. Letter 54: 7. 1916.

"Pileus cuneate, tapering to the base (2 cm. high), cut into a few fimbriate segments. Surface pale, smooth. Hymenium unilateral, pale yellow (honey yellow of Ridgway), smooth. Cystidia none. Spores globose,  $3\frac{1}{2}$ –4 mic., hyaline, smooth. The plant grows densely caespitose in the earth, from a common mycelial base. It belongs in Section 7 of my recent pamphlet on Stipitate Stereums." Florida.

Perhaps the above is *S. Burtianum* or *S. tenerrimum*.

**Stereum cupulatum** Patouillard in Duss, Fl. Crypt. Antilles Fr. 233. 1904.

Scattered or close together, orbicular, from resupinate becoming cup-shaped, attached by a dorsal point, coriaceous, rigid, hard; external face glabrous, not zonate, brown, the margin entire or sinuate, acute; hymenium pruinose, even, concave, dull cinereous, reddish towards the border; trama compact, brown-umber; spores cylindric-ovoid, colorless,  $6 \times 3 \mu$ ; no cystidia.

Fructifications 6–8 mm. in diameter.

On bark of *Prunus Dussii*.—Forest of Buins-Jaunes. Duss, 212.

The above is a translation of the original description; the species seems to be very near, if at all distinct from, *Stereum vibrans*, which Patouillard did not recognize among the species of Guadeloupe.

**Stereum fragile** Patouillard, Soc. Myc. Fr. Bul. 16: 179. 1900; Sacc. Syll. Fung. 16: 187. 1902.

Fructification resupinate at first, becoming dimidiate, orbicular, rigid, hard, more or less incised at first, the margin erect and acute; upper surface plane, ochraceous russet, tomentose, with some reddish and nearly glabrous concentric zones; trama 1 mm. thick, whitish, compact; hymenium plane, livid, becoming purplish; cystidia abundant, fusoid, not colored, thin-walled,  $40 \times 10 \mu$ .

On decaying wood. Guadeloupe.

This fungus is very fragile and divides radially with great ease. Its aspect is like that of *S. fasciatum*, *S. lobatum*, etc., but

it is easily distinguished by the violaceous tint of the hymenium. I have not seen authentic specimens of *S. fragile*, but from the foregoing translation of the original description, it seems very probable that *S. fragile* may prove a synonym of *S. albobadium*, a species common in the West Indies but not recognized by Patouillard among the species of Guadeloupe.

**Stereum fimbriatum** Ellis, Torr. Bot. Club Bul. 6: 133. 1877.

According to the authentic specimen from Ellis to Cooke in Kew Herb., this is a whitish, flaxy mass having no hymenium and quite indeterminable.

**Stereum Galeottii** Berkeley, Hooker's Jour. Bot. 3: 15. 1851; Sacc. Syll. Fung. 6: 574. 1888; Massee, Linn. Soc. Bot. Jour. 27: 176. 1890.

"Umbonato-sessile, parvum, convexum, rigidum; pileo cervino velutino-tomentoso crebrissime badio-zonati; zonis hic illic glabris nitentibus; hymenio cinereo-alutaceo. Galeotti, No. 6853.

"Hab. Caripi, Spruce; Vera Cruz, Galeotti; Xalapa, Mr. Harries.

"Pileus  $1\frac{1}{2}$  inch broad, 1 inch long, subflabelliform, umbonato-sessile, mostly convex above, slightly undulated, thin but rigid, fawn-colored, clothed with velvety down; repeatedly zoned; zones mostly very close and narrow, frequently forming bay-brown, smooth and shining, alternating with paler fasciae. Hymenium tan-colored with a cinereous tinge.

"Undoubtedly nearly allied to *Stereum lobatum*, Kze, but a much smaller and neater species."

The type of the above should be compared with *Stereum versicolor*.

**Stereum griseum** Schweinitz, Naturforsch. Ges. Leipzig Schrift. 1: 106. 1822 (under *B. Sterea* of *Thelephora*); Fries, Elenchus Fung. 1: 179. 1828.—*Stereum porrectum* Fries, Epicr. 548. 1838; Sacc. Syll. Fung. 6: 579. 1888.

I have been unable to find any Schweinitzian specimen of this species. It seems probable that the description was based on the old stage of *Stereum fasciatum* in which the attachment is by

umbo prolonged into stem-like form. Such fructifications occur rarely and are perplexing if not gathered in the same collection with the usual sessile fructifications.

**S. ochroleucum** Fries, Hym. Eur. 639. 1874; Sacc. Syll. Fung. 6: 562. 1888; Masee, Linn. Soc. Bot. Jour. 27: 184. 1890.

*Corticium ochroleucum* Fries, Epicr. 557. 1838.—Not *Stereum ochroleucum* Bres. Ann. Myc. 1: 91. 1903, nor Brinkmann, Westfälische Pilze, 49.

Type: authentic specimen in Kew Herb.

This species does not occur in North America and adjacent regions although reported from time to time from United States, Cuba, and Venezuela. Since I have not received under any name specimens of the true *Stereum ochroleucum* from European correspondents, this species is probably rare in Europe, and it may help toward recognition of the species to call attention to the specimen in Kew Herbarium.

The specimen is labelled:

“*Corticium ochroleucum* Fr.

Svex. Westm.

Maji — leg. Lbd.”

This specimen agrees well with the original description; its reflexed portion is  $1\frac{1}{2}$  cm. broad, about  $1-1\frac{1}{5}$  mm. thick as the sections show in my preparation; the consistency is soft in comparison with *S. hirsutum* and the hyphae about  $2\frac{1}{2}$  mm. in diameter, granule-incrusted, and interwoven throughout the thickness of the pileus rather than parallel and longitudinally arranged side by side as in *S. hirsutum* and *S. sulphuratum*. In other words there is not the sharply marked intermediate layer which Fries regarded as an important distinctive character of the genus *Stereum*, and this is probably the reason for his originally regarding this species as a *Corticium* although broadly reflexed. There is not present a hardened crust or golden zone to mark the upper side of the intermediate region, but instead the hyphae become more loosely arranged toward the surface and become the hairy covering of that side. No cystidia, gloecystidia, nor colored conducting organs are present; the spores are hyaline, even,  $4\frac{1}{2}-5 \times 3 \mu$ .

The American *Stereum spumeum* has aspect and structure very similar to *Stereum ochroleucum* Fr. but differs by having incrusted cystidia.

**Stereum unicum** Lloyd, Myc. Writ. 4. Stip. Stereums, 35. text f. 556. 1913.

The type is in New York State Museum under the name *Thelephora speciosa* unless relabeled to conform to the name applied by Lloyd. The type bears no basidia yet and is not determinable as to genus; it was collected in Providence, Saratoga County, New York, where I have been looking for a fertile specimen when in the original locality occasionally in the summer.

#### EXCLUDED SPECIES

**Stereum acerinum** (Pers.) Fr. is *Aleurodiscus acerinus* (Pers.) v. Höhn. & Litsch.

**Stereum acerinum** var. **nivosum** Berk. & Curtis is *Aleurodiscus nivosus* (B. & C.) v. Höhn. & Litsch.

**Stereum calyculus** Berk. & Curtis is *Craterellus calyculus* (B. & C.) Burt.

**Stereum candidum** Schweinitz is *Aleurodiscus candidus* (Schw.) Burt.

**Stereum carolinense** Cooke & Ravenel is *Sparassis spathulatus* (Schw.) Fr.

**Stereum duriusculum**, as determined by Patouillard in Duss, Fl. Antilles Fr. 232. 1903, is probably *Hypochnus pallescens* (Schw.) Burt, a species common in the West Indies.

**Stereum Guadelupense** Patouillard, Soc. Myc. Fr. Bul. 15: 201. pl. 10. f. 1. 1899. According to von Höhnelt & Litschauer, K. Akad. Wiss. Wien Sitzungsber. 116: 753. 1907, this is a *Boletus* overrun by a *Sepedonium*.

**Stereum Haydeni** Berkeley in Masee, Linn. Soc. Bot. Jour. 27: 199. 1890.

The type, in Kew Herbarium, was collected in Ohio; it is strictly resupinate, has its hyphae loosely interwoven from hymenium to substratum, and has no characters which justify its inclusion in *Stereum* as comprehended in my work. The

hymenium is deteriorated but shows no cystidia; the species may be sought for in Ohio as a probable *Corticium*.

**Stereum insolitum** Lloyd, Myc. Writ. 5. Myc. Notes 47: 665. *text f. 956*. 1917, is a young specimen of *Thelephora regularis* Schw.

Through the kindness of Professor McFarland, I have examined his portion of the original specimen. Most of the spores attached to the basidia are as published by Lloyd; a few spores are  $6-7 \times 5 \mu$ , rough-walled and still hyaline; occasional spores in a preparation from near the base of the pileus are colored and tuberculate-irregular.

**Stereum Leveillianum** Berk. & Curtis is *Tremellodendron Leveillianum* (B. & C.) Burt.

**Stereum Micheneri** Berk. & Curtis is *Thelephora albido-brunnea* Schw.

**Stereum Mancianus** Sacc. & Cub. is *Aleurodiscus strumosus* (Fr.) Burt.

**Stereum populneum** Peck, N. Y. State Mus. Rept. 47: 145. 1894.

This is known in resupinate form only and should not be included in *Stereum*.

**Stereum pruinatum** Berk. & Curtis, Linn. Soc. Bot. Jour. 10: 332. 1868.

This is known in resupinate form only and should not be included in *Stereum*.

**Stereum scriblitum** Berk. & Cooke, Grevillea 7: 102. 1879; Sacc. Syll. Fung. 6: 567. 1888.

The type collected by Gerard, 171 (in Kew Herb.) was studied. This is the conidial stroma of *Ustilina vulgaris*.

**Stereum seriatum** Berk. & Curtis is *Aleurodiscus seriatus* (B. & C.) Burt.

**Stereum spongiosum** Masee is *Thelephora albido-brunnea* Schw.

**Stereum strumosum** Fries is *Aleurodiscus strumosus* (Fr.) Burt.

**Stereum subcruentatum** Berk. & Curtis, Am. Acad. Arts & Sci. Proc. 4: 123. 1858, is *Aleurodiscus subcruentatus* (Berk. & Curtis) Burt, n. comb.; now included among American species, because of collections received from California and Oregon.

**Stereum triste** Berk. & Curtis, Linn. Soc. Bot. Jour. 10: 332. 1868.

This is the conidial stroma of a Pyrenomycete and shows young perithecia under the stroma in the type in Curtis Herb. Collection in Kew Herb., *C. Wright*, 252, has similar structure but did not show perithecia in my sections.

(To be continued.)



## EXPLANATION OF PLATE

## PLATE 2

All figures of plates 2-6 have been reproduced natural size from photographs of dried herbarium specimens unless otherwise noted.

Fig. 1. *Stereum caperatum*. Specimen collected at St. Martinville, La., by A. B. Langlois.

Fig. 2. *S. hydrophorum*. Specimen collected at Rio Mato, Venezuela, by M. A. Carriker.

Fig. 3. *S. Ravenelii*. Type distribution in Ravenel, Fungi Car. 4: 13.

Fig. 4. *S. surinamense*. Specimen collected at Consuelo, San Domingo, by N. Taylor, 12.

Fig. 5. *S. Burtianum*. Specimens collected at Amherst, Mass., by P. J. Anderson.

Fig. 6. *S. quisquiliare*. From Lloyd's illustration of the type.

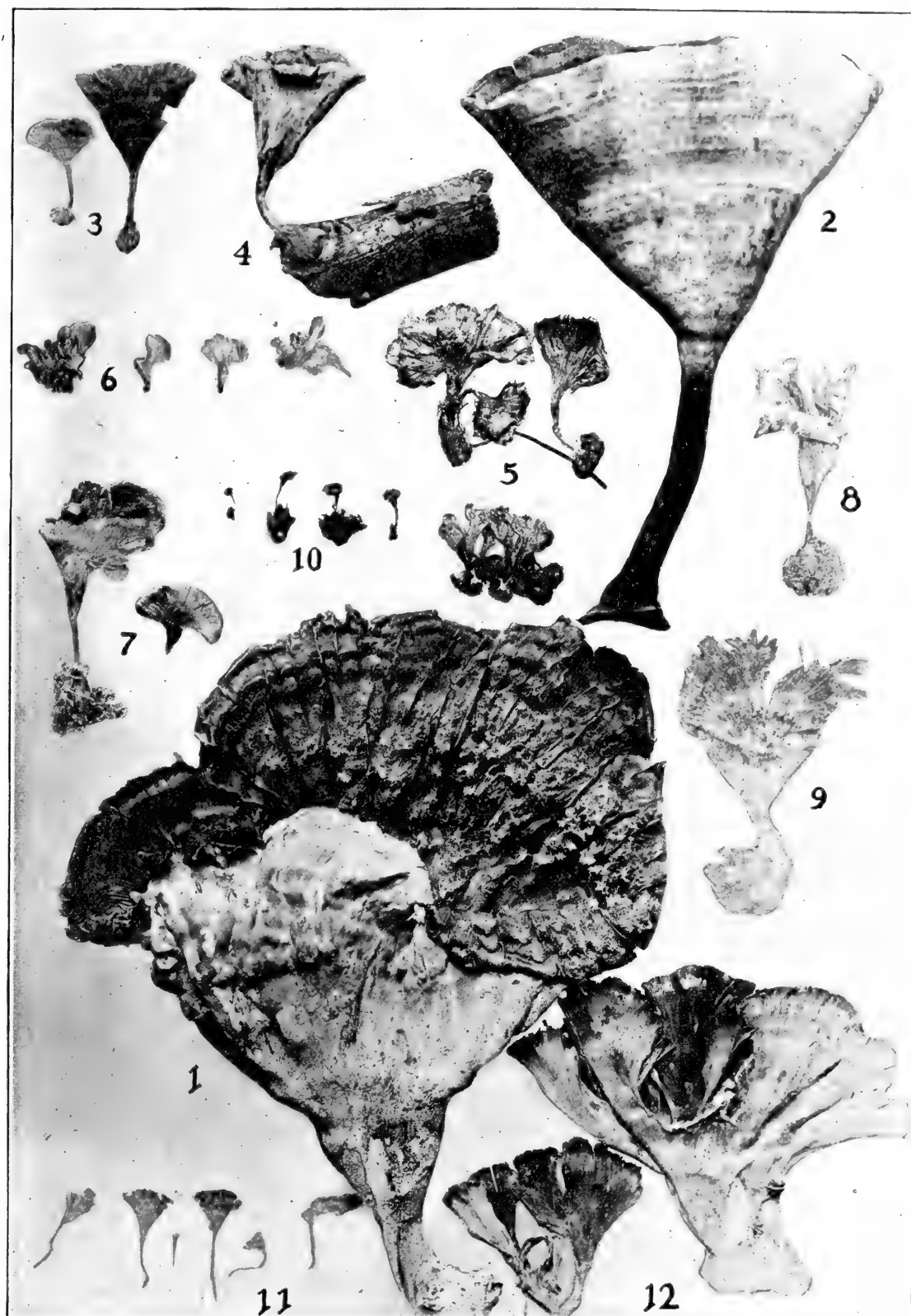
Fig. 7. *S. aurantiacum*. Specimens collected at Port Antonio, Jamaica, by F. S. Earle.

Figs. 8 and 9. *S. diaphanum*. Fig. 8 from type of *S. diaphanum*, and Fig. 9 from type of *S. Willeyi*.

Fig. 10. *S. exiguum*. Type.

Fig. 11. *S. tenerimum*. Type.

Fig. 12. *S. pergamenum*. Type distribution in Ravenel, Fungi Car. 3: 25.



BURT—THELEPHORACEAE OF NORTH AMERICA

1. *STEREUM CAPERATUM*.—2. *S. HYDROPHORUM*.—3. *S. RAVENELII*.—4. *S. SURINAMENSE*.—  
5. *S. BURTIANUM*.—6. *S. QUISQUILIARE*.—7. *S. AURANTIACUM*.—8-9. *S. DIAPHANUM*.—10. *S. EXIGUUM*.—11. *S. TENERRIMUM*.—12. *S. PERGAMENUM*.





## EXPLANATION OF PLATE

## PLATE 3

Figs. 13 and 14. *S. pallidum*. Fig. 13, specimen collected and determined by G. Bresadola; Fig. 14, specimen collected at Blowing Rock, N. C., by G. F. Atkinson.

Fig. 15. *S. elegans*. Specimen collected at Mayaguez, Porto Rico, by B. L. Santiago, 12.

Fig. 234. *S. decolorans*. Type.

Fig. 16. *S. radicans*. Specimen collected at Grenada, by W. E. Broadway.

Fig. 17. *S. pusiolum*. Specimen collected at Rio Piedras, Porto Rico, by J. R. Johnston, 89.

Fig. 18. *S. glabrescens*. Specimen collected at Sumidero, Cuba, by J. A. Shafer, 13906.

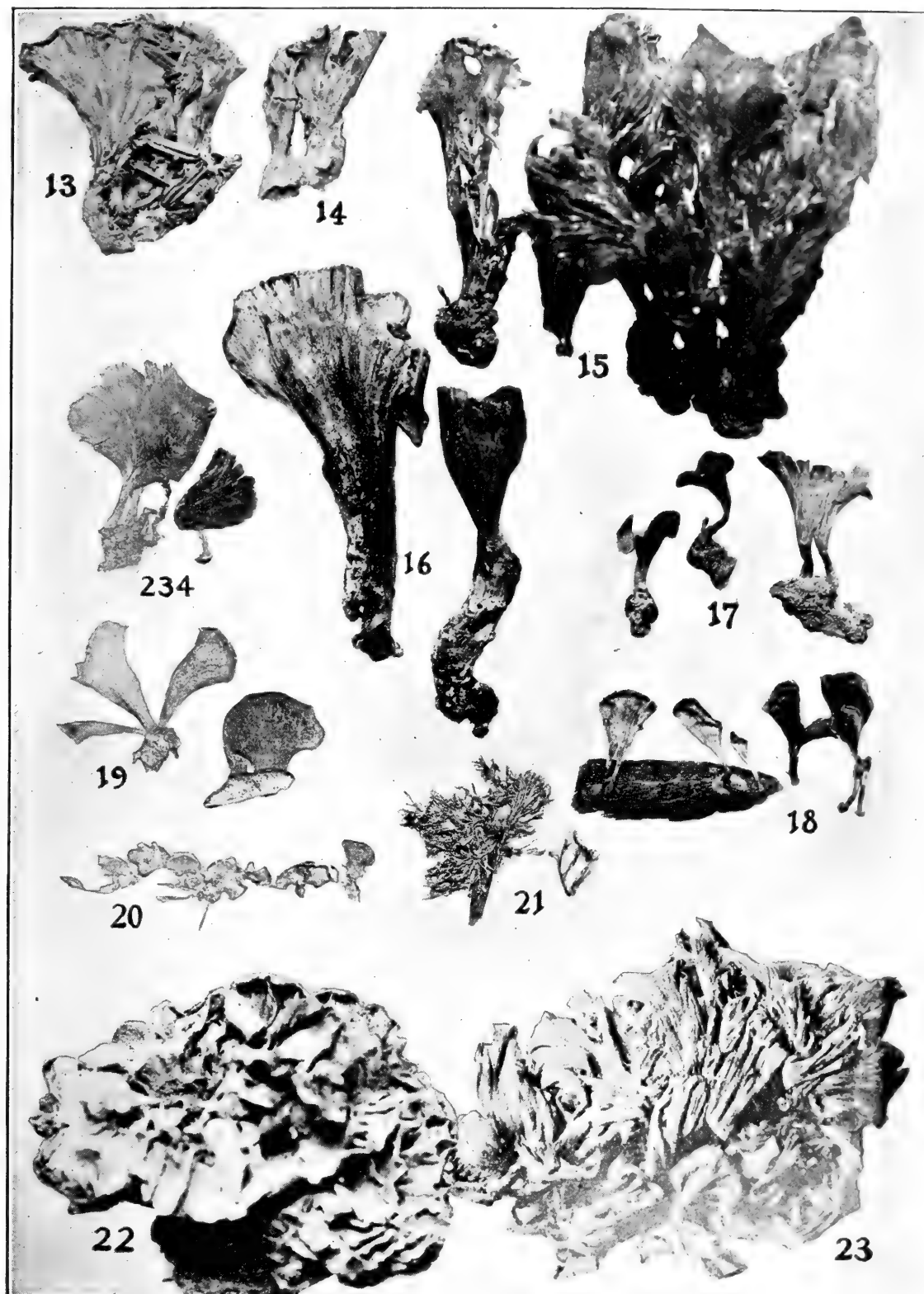
Fig. 19. *S. fissum*. Type.

Fig. 20. *S. cyphelloides*. Type.

Fig. 21. *S. Hartmanni*. Specimen collected at St. Kitt's, by N. L. Britton & J. F. Cowell.

Fig. 22. *S. craspedium*. Specimen collected in Dutch Guiana, by J. Samuels.

Fig. 23. *S. petalodes*. From C. G. Lloyd's illustration of the type.



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13-14. *STEREUM PALLIDUM*.—15. *S. ELEGANS*.—234. *S. DECOLORANS*.—16. *S. RADICANS*.—17. *S. PUSIOLUM*.—18. *S. GLABRESCENS*.—19. *S. FISSUM*.—20. *S. CYPHELLOIDES*.—21. *S. HARTMANNI*.—22. *S. CRASPEDIUM*.—23. *S. PETALODES*

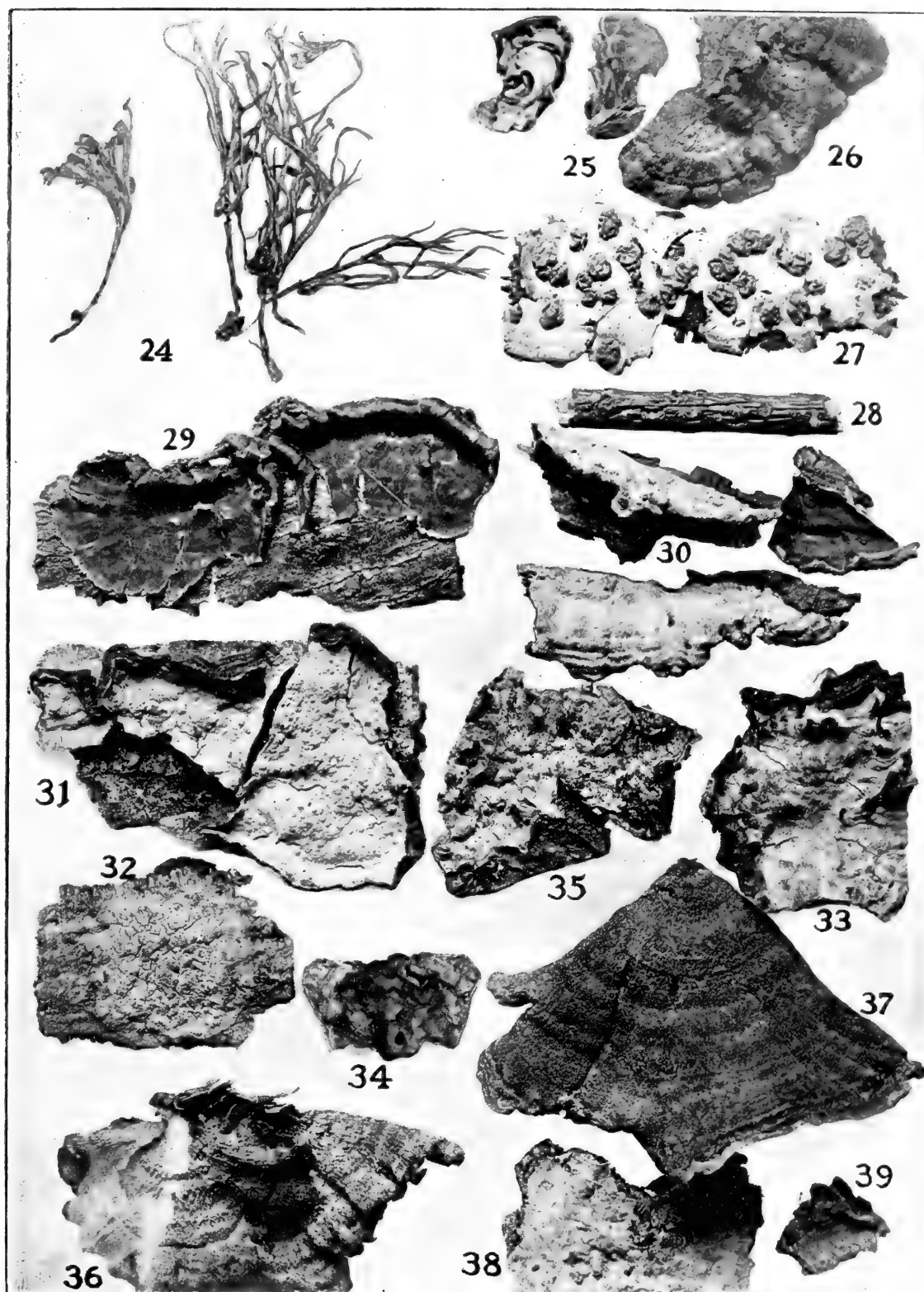




## EXPLANATION OF PLATE

## PLATE 4

- Fig. 24. *S. proliferum*. Type.  
Fig. 25. *S. caespitosum*. Type.  
Fig. 26. *S. fuscum*. Specimen collected at Middlebury, Vt., by E. A. Burt.  
Fig. 27. *S. rufum*. Specimen collected at Middlebury, Vt., by E. A. Burt.  
Fig. 28. *S. Pini*. Specimen collected at Chocorua, N. H., by W. G. Farlow, 37.  
Fig. 29. *S. purpureum*. Specimen collected at North Ferrisburg, Vt., by E. A. Burt.  
Fig. 30. *S. rugosiusculum*. Specimen collected at Creve Coeur Lake, Mo., by E. A. Burt.  
Figs. 31 and 32. *S. Murrayi*. Fig 31, old reflexed specimen collected at Grand View Mt., Vt., and Fig. 32, resupinate specimen collected at Ripton, Vt., both by E. A. Burt.  
Fig. 33. *S. saxitas*. Type.  
Figs. 34 and 35. *S. styracifluum*. Fig. 34, type; Fig. 35, specimen collected at Auburn, Ala., by F. S. Earle & C. F. Baker.  
Fig. 36. *S. gausapatum*. Specimen collected at Toronto, Canada, by T. Langton.  
Fig. 37. *S. australe*. Type.  
Figs. 38 and 39. *S. rugosum*. Fig. 38, specimen collected at Ithaca, N. Y. by G. F. Atkinson; Fig. 39, reflexed specimen collected in Epping Forest, England, by E. A. Burt.



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24. *STEREUM PROLIFERUM*.—25. *S. CAESPITOSUM*.—26. *S. FUSCUM*.—27. *S. RUFUM*.—28. *S. PINI*.—  
29. *S. PURPUREUM*.—30. *S. RUGOSIUSCULUM*.—31–32. *S. MURRAYI*.—33. *S. SAXITAS*.—34–35. *S. STY-*  
*RACIFLUUM*.—36. *S. GAUSAPATUM*.—37. *S. AUSTRALE*.—38–39. *S. RUGOSUM*.





## EXPLANATION OF PLATE

## PLATE 5

Fig. 40. *S. sanguinolentum*. Specimen collected in Little Notch, Vt., by E. A. Burt.

Fig. 41. *S. sulphuratum*. Specimen collected at Auburn, Ala., comm. by F. S. Earle.

Fig. 42. *S. hirsutum*. Specimen collected at Smugglers Notch, Vt., by E. A. Burt.

Figs. 43-45. *S. fasciatum*. Fig. 43, young effuso-reflexed stage, and Fig. 44, old stage with attachment by umbos, both collected at Middlebury, Vt., by E. A. Burt; Fig. 45, specimen collected at Formosa, Japan, by S. Kusano, II. 16.

Fig. 46. *S. lobatum*. Specimen collected at Lake City, Fla., by P. L. Ricker, 893.

Fig. 47. *S. versicolor*. From Berkeley's illustration of the type.

Fig. 48. *S. rameale*. Specimen collected at Arlington, Mass., by E. A. Burt.

Fig. 49. *S. sericeum*. Specimen collected at Middlebury, Vt., by E. A. Burt.

Fig. 50. *S. pubescens*. Type.

Fig. 51. *S. conicum*. Type.

Fig. 52. *S. vibrans*. Specimen collected at Rose Hill, Jamaica, by F. S. Earle, 303.

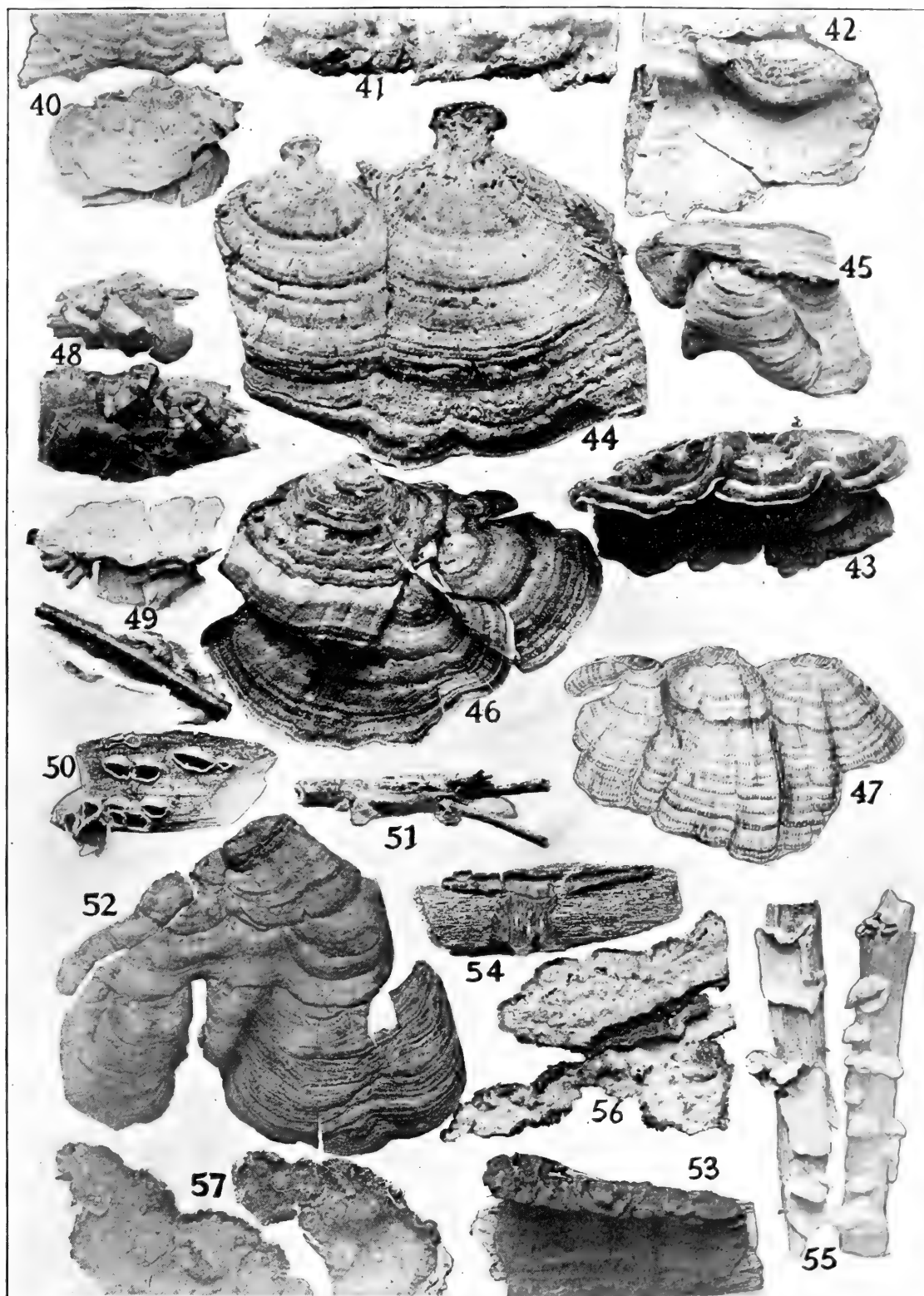
Fig. 53. *S. radiatum*. Specimen collected at Harraby, Ontario, by E. T. & S. A. Harper, 636.

Fig. 54. *S. patelliforme*. Type.

Fig. 55. *S. ochraceo-flavum*. Specimen collected at Albany, N. Y., by H. D. House.

Fig. 56. *S. abietinum*. Specimen collected at Smugglers Notch, Vt., by E. A. Burt.

Fig. 57. *S. ambiguum*. Specimen collected at Ripton, Vt., by E. A. Burt.



## BURT—THELEPHORACEAE OF NORTH AMERICA

40. *STEREUM SANGUINOLENTUM*.—41. *S. SULPHURATUM*.—42. *S. HIRSUTUM*.—43-45. *S. FASCIATUM*.—46. *S. LOBATUM*.—47. *S. VERSICOLOR*.—48. *S. RAMEALE*.—49. *S. SERICEUM*.—50. *S. PUBESCENS*.—51. *S. CONICUM*.—52. *S. VIBRANS*.—53. *S. RADIATUM*.—54. *S. PATELLIFORME*.—55. *S. OCHRACEO-FLAVUM*.—56. *S. ABIETINUM*.—57. *S. AMBIGUUM*.

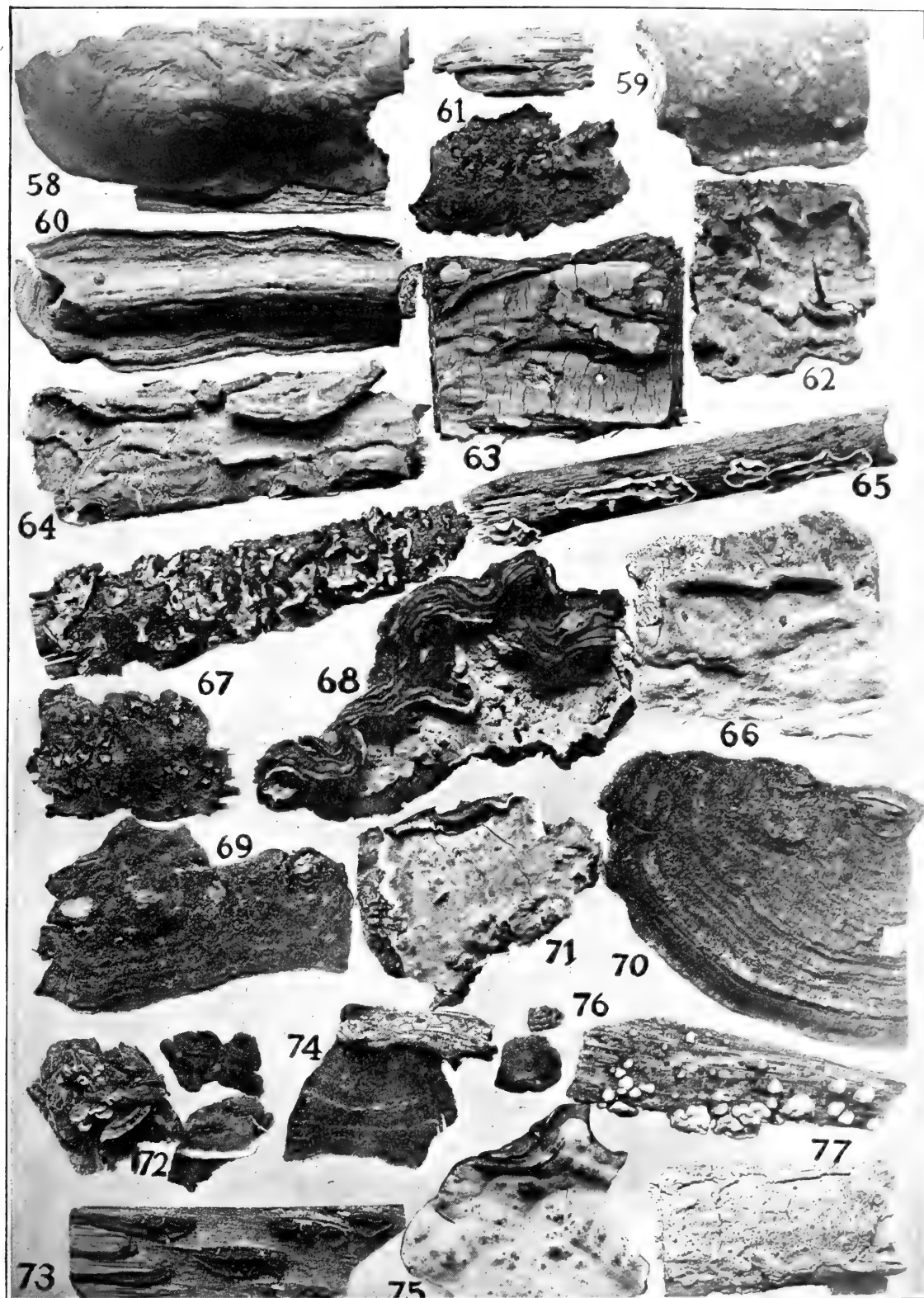




## EXPLANATION OF PLATE

## PLATE 6

- Fig. 58. *S. rugisporum*. Specimen collected at Flagstaff, Ariz., by W. H. Long, 21307.
- Fig. 59. *S. umbrinum*. Specimen reflexed on both sides, collected at Valley Park, Mo., by E. A. Burt.
- Fig. 60. *S. papyrinum*. Specimen on under side of a small limb and reflexed on both sides, collected at Alto Cedro, Cuba, by Underwood & Earle, 1481.
- Fig. 61. *S. Earlei*. Type.
- Fig. 62. *S. Chailletii*. Reflexed specimen collected at Albuquerque, N. M., by W. H. Long & P. W. Seay, 21313.
- Fig. 63. *S. ferreum*. Reflexed specimen collected at Cinchona, Jamaica, by W. A. & E. L. Murrill, 458.
- Fig. 64. *S. cinerascens*. Specimens collected at Middlebury, Vt., by E. A. Burt.
- Fig. 65. *S. magnisporum*. Type.
- Fig. 66. *S. spumeum*. Specimen collected at Cordoba, Mexico, by W. A. & E. L. Murrill, 1214.
- Fig. 67. *S. erumpens*. Type.
- Fig. 68. *S. sulcatum*. Type.
- Fig. 69. *S. subpileatum*. Specimen collected at St. Martinville, La., by A. B. Langlois.
- Fig. 70. *S. sepium*. Type.
- Fig. 71. *S. albobadium*. Specimen collected at Seven Locks, Md., by P. L. Ricker, 1007.
- Fig. 72. *S. heterosporum*. Type.
- Fig. 73. *S. versiforme*. Specimen collected at White Plains, N. Y. by L. M. Underwood.
- Fig. 74. *S. insigne*. Specimen collected in Florida by C. G. Lloyd, 4846.
- Fig. 75. *S. durum*. Type.
- Fig. 76. *S. frustulosum*. Specimens collected at Creve Coeur, Mo., by E. A. Burt.
- Fig. 77. *S. roseo-carneum*. Specimen collected at Arlington Heights, Mass., by E. A. Burt.



## BURT—THELEPHORACEAE OF NORTH AMERICA

58. *STEREUM RUGISPORUM*.—59. *S. UMBRINUM*.—60. *S. PAPYRINUM*.—61. *S. EARLEI*.—62. *S. CHAILLETII*.—63. *S. FERREUM*.—64. *S. CINERASCENS*.—65. *S. MAGNISPORUM*.—66. *S. SPUMEUM*.—67. *S. ERUMPENS*.—68. *S. SULCATUM*.—69. *S. SUBPILEATUM*.—70. *S. SEPIUM*.—71. *S. ALBOBADIUM*.—72. *S. HETEROSPORUM*.—73. *S. VERSIFORME*.—74. *S. INSIGNE*.—75. *S. DURUM*.—76. *S. FRUSTULOSUM*.—77. *S. ROSEO-CARNEUM*.







## THE THELEPHORACEAE OF NORTH AMERICA. XIII<sup>1</sup>

CLADODERRIS, HYPOLYSSUS, CYMATELLA, SKEPPERIA, CYTIDIA,  
SOLENTIA, MATRUCHOTIA, MICROSTROMA, PROTOCORO-  
NOSPORA, AND ASTEROSTROMA

EDWARD ANGUS BURT

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### CLADODERRIS

*Cladoderris* Persoon in Gaudichaud, Voy. Urania Bot. 176. pl. 1, f. 4. 1826; Berkeley, Hooker's London Jour. Bot. 1: 152. 1842; Lévillé, Ann. Sci. Nat. Bot. III. 2: 213. 1844; Fries, Fungi Natal. 20, in K. Sv. Vet. Akad. Handl. 1848; Sacc. Syll. Fung. 6: 547. 1888; Engl. & Prantl, Nat. Pflanzenfam. (1:1\*\*): 126. 1898; Lloyd, Myc. Writ. 4: Syn. *Cladoderris* 2. 1913.—*Cymatoderma* Junghuhn, Fl. Crypt. Javae. 1838. Translation of description of the new genera and species by Montagne, Ann. Sci. Nat. Bot. II. 16: 320. 1841, *Cymatoderma* being designated as a synonym of *Cladoderris*.—*Actinostroma* Klotzsch, Nova Acta Acad. Leop.-Carol. 19: 236. 1843.—*Beccariella* Cesati, Atti Accad. Sci. Napoli 8<sup>3</sup>: 9. 1879.

Fructification coriaceous, pileate, stipitate or sessile; hymenium inferior, with radiating or branched folds, ribs, or veins, verrucose also in some species; basidia simple; spores white, even.

The type species is *Cladoderris dendritica*.

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The species of *Cladoderris* have the same internal structure as those of *Stereum*, and the genus is distinguished from the latter merely by the conspicuously ribbed configuration of the hymenial surface. The genus is tropical in its geographical distribution, although one species has been described from England and another from Florida; the fructifications grow on rotten wood. The earlier gatherings, consisting of only one or two fructifications at a time taken by explorers, sometimes had the stem central in the specimens saved, at other times lateral, and at others, sessile. Each such gathering was made the basis for a new species and the species were arranged in the genus in central-stemmed, lateral-stemmed, or sessile sections. Field observations and more ample collections by mycologists have reduced many such species to synonyms and show that the above sections are of little value; for in *Cladoderris*, as in the other *Thelephoraceae* growing on logs, the inclination of the substratum at the point of attachment and the position of the substratum as to whether over or under the fructification are important in determining the habit and form of the fructification, as already pointed out for *Stereum* and *Hymenochaete* (Mo. Bot. Gard. Ann. 5: 302. 1918).

#### KEY TO THE SPECIES

Hymenium not at all or but slightly verrucose.....1. *C. dendritica*  
Hymenium abundantly verrucose.....2. *C. floridana*

1. *Cladoderris dendritica* Persoon in Gaudichaud, Voy. Urania Bot. 176. pl. 1, f. 4. 1826 (under *Cladoderris* of *Thelephora*); Léveillé, Ann. Sci. Nat. Bot. III. 2: 213. 1844; Fries, Fungi Natal. 22, in K. Sv. Vet. Akad. Handl. 1848; Berk. & Curtis, Linn. Soc. Bot. Jour. 10: 328. 1868; Sacc. Syll. Fung. 6: 549. 1888; Lloyd, Myc. Writ. 4: Syn. *Cladoderris* 3. text f. 520-523. 1913. Plate 1, fig. 1.

*Actinostroma crassum* Klotzsch, Nova Acta Acad. Leop.-Carol. 19: 237. 1843.—*Cladoderris crassa* (Klotzsch) Fries, Fungi Natal. 22, in K. Sv. Vet. Akad. Handl. 1848; Sacc. Syll. Fung. 6: 549. 1888.—*C. Candolleana* Léveillé, Ann. Sci. Nat. Bot. III. 5: 153. 1846; Sacc. Syll. Fung. 6: 549. 1888; Lloyd, Myc. Writ. 4: Syn. *Cladoderris* 10. 1913.

Pileus coriaceous, usually flabelliform, drying pinkish buff, sometimes stained with adhering algae, stipitate or sessile, the upper surface spongy by the heavy coat of tomentum, the margin entire or nearly so; hymenium glabrous, marked with radiating, narrow, branched ribs, usually free from or with few warts; pileus in structure consisting of an intermediate layer, up to  $150\ \mu$  thick, composed of densely longitudinally arranged hyaline hyphae about  $3\ \mu$  in diameter, of a very much broader layer forming the tomentum of the upper surface of the pileus, and of a hymenial layer containing numerous, flexuous, fusoid gloecystidia up to  $60 \times 8-12\ \mu$ ; basidia simple, with 4 sterigmata; spores hyaline, even,  $3-4 \times 3\ \mu$ ; no cystidia found; stem spongy-tomentose but often absent.

Pileus about 2-8 cm. in diameter.

On rotten wood. Mexico, West Indies, South America, Philippine Islands, Australia, and the East Indies. The usual species.

*Cladoderris infundibuliformis* of the Philippines and the East Indies differs from *C. dendritica* in having the upper side much less tomentose, hazel or kaiser-brown in color, radially ridged and with the ridges radially squamulose, and the hymenium containing some incrustated cystidia.

Specimens examined:

Mexico: Orizaba, W. A. & E. L. Murrill, 775 (in N. Y. Bot. Gard. Herb., 775, and Mo. Bot. Gard. Herb., 54611).

Cuba: *C. Wright*, 279 (in Curtis Herb.); Alto Cedro, Earle & Murrill, 443, comm. by N. Y. Bot. Gard. Herb.; Baracoa, L. M. Underwood & F. S. Earle, 1217, comm. by N. Y. Bot. Gard. Herb., 1139 (in N. Y. Bot. Gard. Herb.); Fecha, Habana, Cooke & Horne, comm. by Estacion Central Agronomica, 137; Oriente, J. A. Shafer, 3748 (in Mo. Bot. Gard. Herb., 62171, and N. Y. Bot. Gard. Herb.); Pinar del Rio Province, Earle & Murrill, 225, comm. by N. Y. Bot. Gard. Herb.

Porto Rico: on dead cane, Rio Piedras, J. R. Johnston & J. A. Stevenson, 1110 (in Mo. Bot. Gard. Herb., 55091).

Jamaica: ———, 331 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 62172); Castleton Gardens, W. Harris, 128, comm. by N. Y. Bot. Gard. Herb. under the herbarium name *Stereum Harrisii* Mass.; Moore Town, W. A. & E. L. Murrill, 136, comm. by N. Y. Bot. Gard. Herb.

Colombia, S. Am.: Cauca River, *W. D. Denton*, comm. by *W. G. Farlow*.

Philippine Islands: Todaya, Mindanao, *A. D. E. Elmer*, 10747 (in *Mo. Bot. Gard. Herb.*, 705748).

2. *C. floridana* Lloyd, *Myc. Writ.* 4. Letter 47: 15. 1913; *Myc. Writ.* 4. *Myc. Notes* 39: 535. *text f.* 734. 1915.

Plate 1, fig. 2.

Type: in Lloyd Herb. and in *Mo. Bot. Gard. Herb.*

Pileus coriaceous, cup-shaped, flabelliform or orbicular, drying tawny olive, spongy tomentose but with the tomentum thinning out towards the margin and the surface there zonate, short-stipitate or sessile, the margin thin, entire; hymenium wood-brown, paler towards the margin, densely, minutely warted, with very numerous, short, radially elongated ridges not continuous in a branched system; pileus in structure consisting of an intermediate layer, about 800  $\mu$  broad, composed of interwoven, longitudinally arranged, hyaline hyphae  $2\frac{1}{2}$ – $4\frac{1}{2}$   $\mu$  in diameter, of a broad layer of the tomentum of the upper surface of the pileus, and of a hymenial layer containing numerous flexuous gloecystidia up to  $60 \times 4\frac{1}{2}$ –6  $\mu$ ; spores hyaline, even,  $3 \times 2$   $\mu$ ; hymenial warts up to 80  $\mu$  high, 100–200  $\mu$  in diameter at the base, composed of a mass of erect, granule-incrusted hyphae; no cystidia found.

Pileus up to 5 cm. in diameter.

On frondose wood. Florida.

The hymenial warts are conspicuous in sections, even though not appreciably elevated above the hymenial surface, by contents of localized masses of granule-incrusted hyphae. This incrusting matter is of different nature from that usually present in the walls of hyphae, because it dissolves completely when the sections are treated with dilute potassium hydrate solution; lactic acid does not destroy the incrusting matter.

Specimens examined:

Florida: Bayard, type, comm. by C. G. Lloyd (in *Mo. Bot. Gard. Herb.*, 56609).

#### HYPOLYSSUS

*Hypolyssus* Persoon, *Myc. Eur.* 2: 6. 1825, emend. Berkeley, *Hooker's London Jour. Bot.* 1: 139. *pl.* 6, *f.* 1. 1842; Sacc. *Syll.*

Fung. 6: 521. 1888; Engl. & Prantl, Nat. Pflanzenfam. (1:1\*\*): 127. 1898.

Fructification urn-shaped or top-shaped, hard, corky; hymenium even, lateral.

In adopting the name *Hypolyssus* and defining it anew, Berkeley stated, *loc. cit.*, "As Persoon's genus *Hypolyssus* is altogether effete, and its characters are very like those of the plant before us, I have thought it advisable to restore it."

This genus differs from *Craterellus* by not having the fructifications at all fleshy and by their becoming hard when dry.

1. *Hypolyssus Montagnei* Berkeley, Hooker's London Jour. Bot. 1: 139. *pl. 6, f. 1.* 1842; Sacc. Syll. Fung. 6: 521. 1888; Engl. & Prantl, Nat. Pflanzenfam. (1:1\*\*): 127. *text f. 70 E.* 1898. Plate 1, fig. 4.

An *Hypolyssus foetidus* Masee, Jour. Bot. 30: 197. *pl. 325, f. 3-5.* 1892; Sacc. Syll. Fung. 11: 115. 1895?

Type: in Kew Herb. probably.

Fructifications gregarious, dirty white, 1-2 cm. high, hard when dry, solid, turbinate or urn-shaped, the apex sterile, convex at first, at length slightly depressed; stem slender, central, curved, shorter than the pileus when mature; hymenium covering the outside of the fructification with the exception of the apex, even or nearly so; spores hyaline, even, 3-4  $\mu$  in diameter, none seen attached to basidia.

Fructifications 1-2 cm. high, 2-7 mm. in diameter.

On rotten wood. Mexico, Central America, Guadeloupe, and South America to Bolivia. February in Mexico, July in Bolivia.

The fructifications are hard when dry but soften when moistened so that they may be readily sectioned; *Craterellus taxophilus* is of somewhat similar form but more fleshy consistency. In all the specimens cited below the hymenium is too deteriorated to show the basidia in my preparations. *H. foetidus* occurs on the island of St. Vincent in the region of *H. Montagnei* and was distinguished from the latter by Masee by fetid odor and rugulose hymenium, but there is no observation on record yet as to absence of odor for *H. Montagnei*. Mycological explorers rarely note such data.

## Specimens examined:

Mexico: near Sanborn, Oaxaca, *C. R. Orcutt*, 3336 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 37345).

Honduras: *P. Wilson*, 237, comm. by N. Y. Bot. Gard. Herb.

Guiana: *Spruce*, 70 (in Curtis Herb.).

Bolivia: Mapiri, *A. M. Bang*, distributed by Columbia College Herb., 1479 (in Burt Herb., and Mo. Bot. Gard. Herb., 5002).

## CYMATELLA

*Cymatella* Patouillard, Soc. Myc. Fr. Bul. 15: 193. *pl.* 9, *f.* 4-6. 1899; Sacc. Syll. Fung. 16: 49. 1902.

Marasmioid fungi, minute, stipitate, reviving with moisture; pileus lacking a pellicle; hymenium inferior, lacking lamellae, even or slightly wavy; spores hyaline.

*Cymatella* is a genus of a few species of tropical fungi, segregated from *Craterellus*, with which the specimens agree in the even hymenium and consistency, but related to *Marasmius* in structure of the pileus and the reviving of the specimens with moisture. The specimens are not notably marasmioid in the recent gathering which I have seen and the genus seems unnecessary.

1. *Cymatella minima* Patouillard, Soc. Myc. Fr. Bul. 15: 193. *pl.* 9, *f.* 6. 1899; Sacc. Syll. Fung. 16: 49. 1902.

Plate 1, fig. 6.

Pileus plano-convex, reniform, glabrous, pale russet (roux), 3-4 mm. broad, thin, very slightly fleshy, without a pellicle, the margin entire, straight, indented at the base; stem filiform, stuffed, 3 mm. long, glabrous, black, marasmioid, a little larger towards the base, attached to the pileus eccentrically near the indentation; trama composed of loosely arranged, septate, pallid-reddish hyphae 3-5  $\mu$  in diameter; hymenium inferior, dark red, even or with few radial, shallow undulations; basidia clavate, 20-23  $\times$  5-6  $\mu$ , with 4 sterigmata; no cystidia; spores hyaline, even, ovoid, 3-4  $\mu$  long.

On decaying bark. Guadeloupe.

I have seen no specimens of *C. minima*. The figure, after Patouillard, somewhat resembles *Craterellus Humphreyi*, a much larger species, white in color and fleshy.

2. *C. pulverulenta* (Berk. & Curtis) Patouillard, Soc. Myc. Fr. Bul. 15: 194. pl. 9, f. 4. 1899; Sacc. Syll. Fung. 16: 50. 1902.

Plate 1, fig. 5.

*Craterellus pulverulentus* Berkeley & Curtis, Linn. Soc. Bot. Jour. 10: 328. 1868; Sacc. Syll. Fung. 6: 520. 1888.

Type: in Kew Herb. and Curtis Herb.

Fructification pallid ferruginous; pileus orbicular, pulverulent, the margin inflexed; stem thickened towards the base, black; hymenium sparingly venose, colored like the pileus.

Pileus 2 mm. broad; stem  $2\frac{1}{2}$  mm. long.

On bark of sticks. Cuba and Porto Rico. May and July.

A collection of a dozen or so fructifications from Porto Rico by Professor Stevens, taken in connection with specimens of the type collection in Curtis Herb., shows that while the original description of *C. pulverulenta* by Berkeley & Curtis, literally translated above, is correct as far as it goes it does not give details enough for critical comparison with *C. minima*. The specimens of *C. pulverulenta* are plano-convex rather than campanulate as stated by Patouillard, and the margin only slightly inflexed, entire but slightly notched behind near point of attachment of the stem which is sometimes nearly central but usually distinctly eccentric. The spores are hyaline, even,  $3\frac{1}{2} \times 2 \mu$  in the type,  $3-6 \times 2-2\frac{1}{2} \mu$  in more copious occurrence in the Porto Rican gathering, and the hyphae slightly colored,  $3-4 \mu$  in diameter. The dry specimens in Curtis Herbarium now have the upper surface of the pileus Natal brown of Ridgway and the hymenium and the stem bone-brown.

Specimens examined:

Cuba: *C. Wright*, 564, type (in Curtis Herb.).

Porto Rico: Monte Alegullo, *F. L. Stevens*, 1358 (in Mo. Bot. Gard. Herb., 55402, and Stevens Herb.).

3. *C. marasmioides* (Berk. & Curtis) Patouillard, Soc. Myc. Fr. Bul. 15: 194. pl. 9, f. 5. 1899; Sacc. Syll. Fung. 16: 50. 1902.

*Craterellus marasmioides* Berkeley & Curtis, Linn. Soc. Bot. Jour. 10: 328. 1868; Sacc. Syll. Fung. 6: 520. 1888.

Type: in Curtis Herb. and Kew Herb. probably.

Pileus eccentric, rugose, glabrous, rufous, the margin inflexed; stem springing from creeping rhizomorphs, thickened below, black; hymenial folds thick, venose; basidia simple; spores hyaline, even, globose, 4  $\mu$  in diameter—only one found and this not attached to a basidium; no cystidia.

Pileus  $1\frac{1}{2}$ –2 mm. in diameter; stem 1–3 mm. long, about 140  $\mu$  in diameter.

On dead ferns. Cuba.

The fructifications are solitary or in small clusters of up to 5, branching from a common point on the bark and bone-brown throughout; stem central or eccentric in attachment to the pileus. The note on the label as to substratum is "on stumps."

Specimens examined:

Cuba: *C. Wright*, 32, type (in Curtis Herb.).

#### SKEPPERIA

*Skepperia* Berkeley, Linn. Soc. Bot. Trans. 22: 130. *pl.* 25, *f.* A. 1857; Sacc. Syll. Fung. 6: 603. 1888; Engl. & Prantl, Nat. Pflanzenfam. (1:1\*\*): 127. *text f.* 70. A–D. 1898.

Stem short, lateral, abruptly passing over and confluent for some distance with the upper side of the pileus; pileus clavate, convolute on each side so as to form a longitudinal groove, fibrous within.

*Skepperia convoluta* is the type species.

*Skepperia* is a genus of tropical fungi of which three species have been described; two of these occur in South America and one in the West Indies.

1. *Skepperia spathularia* (Berk. & Curtis) Patouillard, Soc. Myc. Fr. Bul. 15: 194. *pl.* 9, *f.* 3. 1899; Sacc. Syll. Fung. 16: 189. 1902. Plate 1, fig. 3.

*Craterellus spathularius* Berkeley & Curtis, Linn. Soc. Bot. Jour. 10: 328. 1868; Sacc. Syll. Fung. 6: 603. 1888.

Type: in Curtis Herb. and Kew Herb. probably.

Fructifications minute, stipitate, everywhere pinkish buff in dried condition; pileus oblique, spathulate; stem springing from an orbicular base, becoming glabrous; pileus in structure 40–80  $\mu$  thick, composed of a layer of longitudinally arranged hyphae

and the hymenial layer; hymenium inferior, nearly even; no cystidia; basidia simple; spores hyaline, even,  $5-7\frac{1}{2} \times 3-4 \mu$ .

Dried fructifications about  $2\frac{1}{2}$  mm. long; pileus  $1-1\frac{1}{2}$  mm. long, 1 mm. broad; stem 1 mm. long,  $120 \mu$  in diameter.

On dead wood in Cuba and on *Nostoc* coating rocks in Trinidad.

Specimens examined:

Cuba: *C. Wright*, 3, type (in Curtis Herb.).

Trinidad: Maravel Beach, near Port of Spain, *R. Thaxter* (in Farlow Herb.).

### CYTIDIA

*Cytidia* Quelet, Fl. Myc. Fr.—. 1888; Patouillard, Essai Tax. . . . ; Bourdot & Galzin, Soc. Myc. Fr. Bul. 26: 222. 1910; Rea, Brit. Basid. 697. 1922.—*Lomatia* Karsten, Finska Vet.-Soc. Bidrag Natur och Folk 48: 403. 1889.—*Auriculariopsis* R. Maire, Rech. Cyt. Tax. 102. 1902, and Soc. Myc. Fr. Bul. 18: Suppl. 102. 1902; Sacc. Syll. Fung. 21: 423. 1912.

Fructifications coriaceous-gelatinous, cup-shaped, sessile, scattered or crowded, often confluent; hymenium even at first, becoming more or less wrinkled or veined; basidia simple; spores white.

*Cytidia* is a genus whose few species have usually been included in *Corticium* but differ from this genus in being resupinate by the middle only, with margins free as in some species of *Stereum*. The configuration of the hymenial surface is decidedly merulioid in our single indigenous species.

### KEY TO THE SPECIES

White or nearly so, pubescent or tomentose.....1. *C. flocculenta*  
White villose; hymenium blood-red.....2. *C. salicina*  
Deep olive-buff to drab; hymenium becoming coarsely merulioid ...3. *C. tremellosa*

1. *Cytidia flocculenta* (Fr.) v. Höhn. & Litsch. K. Akad. Wiss. Wien Sitzungsber. 116: 758. 1907; Wiesner Festschr. Wien 61. 1908; Bourdot & Galzin, Soc. Myc. Fr. Bul. 26: 222. 1910; Rea, Brit. Basid. 697. 1922. Plate 1, fig. 7.

*Thelephora flocculenta* Fries, Elench. Fung. 1: 184. 1828.—*Corticium flocculentum* Fries, Epicr. 559. 1838; Hym. Eur. 647. 1874; Sacc. Syll. Fung. 6: 605. 1888.—*Cyphella ampla* Léveillé, Ann. Sci. Nat. Bot. III. 9: 126. 1848; Fries, Hym. Eur. 662.

1874; Sacc. Syll. Fung. 6: 667. 1888; Patouillard, Tab. Anal. Fung. 1: 113. f. 254. 1884.—*Auriculariopsis ampla* (Lév.) R. Maire, Soc. Myc. Fr. Bul. 18: Suppl. 102. pl. 3, f. 22. 1902; Sacc. Syll. Fung. 21: 423. 1912.—*Stereum pubescens* Burt, Mo. Bot. Gard. Ann. 7: 178. pl. 5. f. 50. 1920.

Fructifications membranaceous, cup-shaped, sessile, white-tomentose, the margin entire, free all around; hymenium veined, fawn-color or bright brown; spores white, even,  $6-10 \times 3-4 \mu$ .

Fructifications 3–10 mm. in diameter, reflexed 1–3 mm.

On *Salix*. Montana and Wyoming. April and May. Rare.

In Europe, this fungus is more frequent on *Populus*. I described the Montana gathering as *Stereum pubescens* with some misgivings. A more recent collection from Wyoming has finally enabled me to refer this species to *Cytidia flocculenta*, a reference which I have confirmed by specimens kindly communicated to me by Bourdot. Since *C. flocculenta* occurs in the United States on *Salix*, gatherings in the past may have been referred to the common *Cytidia* (*Corticium*) *salicina*, from which it differs in smaller, more heavily tomentose pilei and much shorter spores.

Specimens examined:

France: Allier, H. Bourdot, 4726, and two unnumbered specimens;

Aveyron, A. Galzin, 13021, comm. by H. Bourdot, 22632.

Montana: Sheridan, Mrs. L. A. Fitch, in Ellis Collection, 7014, type of *Stereum pubescens* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 56784).

Wyoming: Boulder, F. S. Wolpert, comm. by J. R. Weir, 9742 (in Mo. Bot. Gard. Herb., 56222).

## 2. *C. salicina* (Fries) Burt, n. comb.

*Thelephora salicina* Fries, Syst. Myc. 1: 442. 1821.—*Corticium salicinum* Fries, Epicr. 558. 1838; Hym. Eur. 647. 1874; Sacc. Syll. Fung. 6: 605. 1888; Masee, Linn. Soc. Bot. Jour. 27: 118. pl. 6, f. 1. 1890.—*Lomatia salicina* (Fr.) Karsten, Finska Vet.-Soc. Bidrag Natur och Folk 48: 404. 1889; Icones Hym. Fenniae, 6. f. 10. 1885.—An *Cytidia rutilans* (Pers.) Quelet in Rea, Brit. Basid. 698. 1922? Plate 1, fig. 8.

Type: authentic specimen from Fries in Kew Herb.

Fructifications coriaceous, soft, drying horn-like, rigid, pezizoid when young, becoming expanded, more or less confluent, affixed by the center, the margin free all around and upturned, minutely white-villose; hymenium blood-red, even at first, drying somewhat wrinkled; in structure 400–800  $\mu$  thick, composed of parallel, longitudinally arranged and ascending hyphae with narrow lumen and walls gelatinously modified; basidia simple, with 2 or 4 sterigmata; spores hyaline, even, cylindric, curved,  $12-15 \times 3\frac{1}{2}-5 \mu$  in American specimens,  $16-18 \times 6-8 \mu$  in European specimens as recorded by Karsten also.

Fructifications 1–2 mm. in diameter at first, at length up to 6–12 mm. long by confluence.

On dead limbs of *Salix*. Northern Europe and Canada and northern United States. May to December. Common.

Rea gives *Corticium salicinum* as a synonym of *Cytidia rutilans* (Pers.) Quel., with spores globose, 8  $\mu$  in diameter. I do not find a species *rutilans* in the index of Persoon's 'Synopsis Fungorum' for any thelephoraceous genus and have not access to Quelet's 'Fl. Myc. France.' The globose spores point to a different species from *Corticium salicinum* Fries, with an authentic specimen of which, in Kew Herbarium, I compared one of my gatherings. The description of *Thelephora cruenta* Persoon, Syn. Fung., is too vague to take priority for the specific name over *salicinum* of Fries.

Specimens examined:

Exsiccati: Bartholomew, Fungi Col., 4218; Ellis, N. Am. Fungi, 609; Ell. & Ev., Fungi Col., 1212; Shear, N. Y. Fungi, 54; de Thümen, Myc. Univ., 114.

Sweden: *E. Fries* (in Kew Herb.).

Finland: Mustiala, *P. A. Karsten*, in de Thümen, Myc. Univ., 114.

Austria: Gastein Salisb., *Niessl* (in Mo. Bot. Gard. Herb., 43459); Innsbruck, *V. Litschauer*.

Canada: *J. Macoun*.

Ontario: Byron, *J. Dearness*, in Bartholomew, Fungi Col., 4218; Ottawa, *J. M. Macoun*, 15, comm. by N. Y. State Mus. Herb. (in Mo. Bot. Gard. Herb., 56082); Toronto, *J. H. Faull*, Univ. Toronto Herb., 315 (in Mo. Bot. Gard. Herb., 44882).

Maine: Cumberland, *J. Blake*, comm. by P. L. Ricker; Piscataquis County, *W. A. Merrill*, 2089 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61421).

New Hampshire: Shelburne, *W. G. Farlow* (in Mo. Bot. Gard. Herb., 4777, 4836).

Vermont: Middlebury, *E. A. Burt*, three collections and in Ell. & Ev., Fungi Col., 1212; Shelburne, *C. G. Pringle*, 1044 (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55908).

Massachusetts: Cambridge, *W. G. Farlow* (in Mo. Bot. Gard. Herb., 4386).

Connecticut: Litchfield, *Miss V. S. White* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61360).

New York: Albany, *C. H. Peck*, in Ellis, N. Am. Fungi, 609, *H. D. House* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 59692); Alcove, *C. L. Shear*, in Shear, N. Y. Fungi, 54; East Galway, *E. A. Burt*; Ithaca, *L. B. Walker*, 3 (in Mo. Bot. Gard. Herb., 6693); Middle Grove, *E. A. Burt*; Van Etten, *W. C. Barbour*, 1299 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61666).

Pennsylvania: Trexlertown, *W. Herbst*, comm. by C. G. Lloyd, 0053.

Michigan: Ann Arbor, *E. B. Mains*, comm. by A. H. W. Povah, 888 (in Mo. Bot. Gard. Herb., 58173); East Lansing, *G. H. Hicks* (in Mo. Bot. Gard. Herb., 4850); Marquette County, *W. Trelease* (in Mo. Bot. Gard. Herb., 60659).

Wisconsin: Palmyra, comm. by Univ. Wis. Herb., 58.

Colorado: Placer, *C. L. Shear*, 1022; Canyon City, *T. S. Brandegee* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61427).

Manitoba: Shoal Lake, *I. L. Connors*, comm. by G. R. Bisby (in Mo. Bot. Gard. Herb., 58973).

Idaho: Priest River, *J. R. Weir*, 95, 357 (in Mo. Bot. Gard. Herb., 9534 and 17037 respectively).

Washington: Falcon Valley, *W. N. Suksdorf*, 2.

3. *C. tremellosa* Lloyd, Myc. Writ. 4. Myc. Notes 38: 516. text f. 512, 513. 1912. Plate 1, fig. 9.

Type: in Lloyd Herb. probably.

Fructifications coriaceous, soft, resupinate, at first circular, pezizoid, and with the thickened, paler margin slightly upturned, at length confluent, effused, and with the hymenial surface merulioid by the elevated confluent margins and reticulate veins, drying deep olive-buff to drab; hyphae with walls gelatinously modified, nodose-septate; basidia simple, with 2-4 sterigmata; spores white in spore collection, simple, even,  $8-11 \times 5-6 \mu$ .

Fructifications at first 1-3 mm. in diameter, finally confluent over areas  $3-8 \times 3-5$  cm.

On bark of decaying limbs of frondose species in low woods. Louisiana. November to June.

Although the young fructifications of *C. tremellosa* are decidedly pezizoid in aspect, yet, in the specimens seen by me, these small fructifications are in such close proximity to resupinate confluent masses of the same color that the resemblance to a *Merulius* is the more striking.

Specimens examined:

Louisiana: St. Martinville, A. B. Langlois, 2620, 2670, aw, 594 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61681); C. G. Lloyd, 2402 (in N. Y. Bot. Gard. Herb. and Burt Herb.).

#### SOLENTIA

*Solenia* Persoon, Roemer Neues Mag. Bot. 1: 116. 1794; Syn. Fung. 675. 1801; Myc. Eur. 1: 334. 1822; Hoffman, Deutschl. Fl. 2: pl. 8. 1795; Fries, Syst. Myc. 2: 200. 1823; Hym. Eur. 595. 1874; Sacc. Syll. Fung. 6: 424. 1888; Engl. & Prantl, Nat. Pflanzenfam. (1:1\*\*): 129. 1898; Rea, Brit. Basid. 701. 1922.

Fructifications coriaceous or membranaceous, sessile or nearly so, cylindric or turbinate, gregarious, fasciculate, rarely solitary, but not joined together except by confluence, seated on a superficial, felt-like, floccose and sometimes fugacious mycelium; basidia simple; spores white or colored.

The type species is *Solenia candida* Pers.

*Solenia* is closely related to *Cyphella* but differs from the latter by more numerous and less scattered fructifications which are more cylindric in the case of most species, and in having the gregarious fructifications seated on a more or less manifest mycelium. The

priority of Persoon's publication of *Solenia* is clearly established by Hoffmann's own work, for on the page of text following plate 8 he gives the full title of Persoon's work and its place of publication.

### KEY TO THE SPECIES

- Spores white.....1  
 Spores colored.....11. *S. endophila*  
     1. Fructifications white or but slightly cream-colored.....2.  
     1. Fructifications colored.....3.  
 2. Fructifications white, scattered, cylindric, mouth not contracted; spores subglobose.....1. *S. candida*  
 2. Fructifications white, fasciculate, mouth contracted; spores subglobose.....2. *S. fasciculata*  
 2. Fructifications straw-color or shining white; in California....12. *S. gracilis*  
 2. Fructifications white, crowded, confluent into a reticulate form; spores  $4\frac{1}{2}$ -5  $\times$  4-4 $\frac{1}{2}$   $\mu$ .....3. *S. polyporoidea*  
 2. Fructifications densely crowded, slightly tinted with cream; spores 4-6  $\times$  2-3  $\mu$ .....4. *S. conferta*  
 2. Fructifications white, cylindric, villose; in Sweden.....13. *S. villosa*  
     3. Fructifications ochraceous; spores 10-11  $\times$  4 $\frac{1}{2}$   $\mu$ ; on stems of ferns.....5. *S. filicina*  
     3. Fructifications sulphur-colored; spores subglobose....6. *S. sulphurea*  
     3. Fructifications some shade of brown; spores 6-11  $\times$  1 $\frac{1}{2}$ -4 $\frac{1}{2}$   $\mu$ .....7. *S. anomala*  
     3. Fructifications pallid neutral gray, cylindric-clavate or pyriform; spores 9  $\times$  5 $\frac{1}{2}$   $\mu$ ; in California.....8. *S. cinerea*  
     3. Fructifications cinereous, cup-shaped, sessile; spores 4 $\frac{1}{2}$ -6 $\frac{1}{2}$   $\times$  4 $\frac{1}{2}$ -5  $\mu$ .....9. *S. poriaeformis*  
     3. Fructifications partially buried in the subiculum; spores 5-6  $\times$  3  $\mu$ ; in Venezuela.....10. *S. subporiaeformis*

1. *Solenia candida* Persoon, Roemer Neues Mag. Bot. 1: 116. 1794; Syn. Fung. 676. 1801; Myc. Eur. 1: 334. 1822; Hoffmann, Deutschl. Fl. 2: pl. 8, f. 1. 1795; Fries, Syst. Myc. 2: 200. 1823; Hym. Eur. 596. 1874; Sacc. Syll. Fung. 6: 424. 1888; Bourdot & Galzin, Soc. Myc. Fr. Bul. 26: 226. 1910; Rea, Brit. Basid. 702. 1922.

Fructifications scattered or solitary, 2-3 mm. high, cylindric, shining white, glabrous; spores hyaline, even, 4-5  $\times$  3 $\frac{1}{2}$ -4  $\mu$ .

On rotten wood, New York to Louisiana, and on palm in Bermuda. August to December. Rare.

The specimens which I have referred to *S. candida* are white when fresh but becoming pale pinkish buff in the herbarium, uniformly cylindric, often only 1 mm. long by 150  $\mu$  in diameter,

and notable by the mouths being nearly or quite the full diameter of the cavity of the fructification, as though the fructification were truncate. In Hoffmann's illustration, cited for *S. candida* by Persoon in his following works, the enlarged figure shows the fructifications as true cylinders with mouths open the full width of the cavity. In this figure the fructifications are enlarged to length of about 4 mm. and diameter of about 1 mm. and about the same distance apart as their length. In the collections which I refer to *S. candida*, the fructifications may be closer together than their length but always with small spaces between the fructifications, which are soft and crush easily under the cover glass in preparations.

Specimens examined:

New Hampshire: Hanover, *G. R. Lyman*, 32 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61693).

New York: Buffalo, *G. W. Clinton* (in U. S. Dept. Agr. Herb., under the name *Solenia fasciculata*, and in Burt Herb.); East Galway, *E. A. Burt*.

Louisiana: St. Martinville, *A. B. Langlois*, 1743.

Bermuda: *S. Brown*, *N. L. Britton & F. J. Seaver*, 1499 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61649).

2. *S. fasciculata* Persoon, Myc. Eur. 1: 335. pl. 12, f. 8 and 9. 1822; Fries, Syst. Myc. 2: 200. 1823; Hym. Eur. 596. 1874; Schweinitz. Am. Phil. Soc. Trans. N. S. 4: 180. 1832; Morgan, Cincinnati Soc. Nat. Hist. Jour. 9: 7. 1886; Sacc. Syll. Fung. 6: 424. 1888; Bourdot & Galzin, Soc. Myc. Fr. Bul. 26: 225. 1910; Rea, Brit. Basid. 702. 1922.—An *Solenia gracilis* Copeland, Ann. Myc. 2: 508. 1904?

Fructifications gregarious and usually fasciculate, cylindric-clavate, somewhat enlarged towards the apex, 2–7 mm. high, white, minutely silky, almost smooth, sometimes rising from a thin, white mycelium; spores of European specimens white, even,  $4-5\frac{1}{2} \times 3-4 \mu$ ,  $4-6 \times 3-5 \mu$  in American specimens.

The specimens of *S. fasciculata* from France, sent to me by Bourdot and determined by him, have retained their white color for the seven years since gathered; they are seated on a white subiculum, common to the group of fructifications, and are

soft and easily crushed under the cover-glass in preparations and the hairs on the outside of the fructifications are colorless and soft in my preparations stained with eosin. The American specimens become pallid in the herbarium in a short time and may have spores slightly larger than European specimens. Two of our gatherings cited below have still the thin mycelium or subiculum, common to small groups of young fructifications; this apparently disappears as the fructifications become older and is not evident in most gatherings. The diameter of the mouth is somewhat smaller than that of the cavity into which it opens in this species, so that the apex is merely obtuse.

Specimens examined:

Exsiccati: Ellis, N. Am. Fungi, 937, under the name *Solenia villosa*; Ravenel, Fungi Car. 4: 21.

France: Loubotis, A. Galzin, 18240, 18241, comm. by H. Bourdot, 16094 and 15752 respectively.

Canada: Toronto, J. H. Faull, Univ. Toronto Herb., 640 (in Mo. Bot. Gard. Herb., 44909).

Vermont: Middlebury, E. A. Burt, three gatherings.

New York: Altamont, E. A. Burt; East Galway, E. A. Burt.

New Jersey: Newfield, Ellis & Harkness, in Ellis, N. Am. Fungi, 937.

Virginia: Mountain Lake, W. A. Murrill, 403 in part (in Mo. Bot. Gard. Herb., 54531).

South Carolina: H. W. Ravenel, in Ravenel, Fungi Car. 4: 21.

Florida: Daytona, R. Thaxter, comm. by Farlow Herb., 234 (in Mo. Bot. Gard. Herb., 63044).

Louisiana: St. Martinville, A. B. Langlois, 2998.

### 3. *S. polyporoidea* Peck, Mss. n. sp.

*Solenia villosa* Fr. var. *polyporoidea* Peck, N. Y. State Mus. Rept. 41: 86. 1888.

Type: in N. Y. State Mus. Herb.

At first granuliform and distinct, finally confluent along the sides in contact and forming a more or less connected, reticulate layer with the bare wood showing in many little areas  $\frac{1}{2}$ –1 mm. in diameter; no subiculum present; fructifications pure white, sessile, tubular, 700  $\mu$  long, 200–300  $\mu$  in diameter, about 5 to a

mm. where confluent, the free surfaces of the exterior clothed with weak, matted, hyaline, even hairs up to  $30\ \mu$  long by  $1\ \mu$  in diameter; spores copious, hyaline, even, subglobose, slightly flattened on one side,  $4\frac{1}{2}$ – $5 \times 4$ – $4\frac{1}{2}\ \mu$ .

Covering areas 3–7 cm. long,  $\frac{1}{2}$  cm. broad.

On decorticated, decaying wood of *Tsuga*. Adirondack Mountains, New York.

The hairs on the exterior are like ordinary hyphae of the walls and radiate outward only up to  $30\ \mu$  rather than like the much larger, distinctive, external hairs of *C. fasciculata*; the cups are so firmly grown together that they are more or less mutilated and the walls torn in teasing the fructifications apart with needles under the dissecting microscope when immersed in water. This species is noteworthy by the confluence of the cups as well as by the matted, weak hairs.

Specimens examined:

New York: Adirondack Mts., *C. H. Peck*, type (in N. Y. State Mus. Herb.).

4. *S. conferta* Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructifications crowded, sometimes up to 4 to a mm. and then somewhat confluent, cylindric, white with slight creamy tint, clothed with slender, appressed, even hairs  $75 \times 2\frac{1}{2}$ – $3\ \mu$ , subhyaline, slightly yellowish in preparations stained with eosin; basidia simple,  $12$ – $15 \times 4\ \mu$ , with 4 sterigmata; spores white in a spore collection, even,  $4$ – $6 \times 2$ – $3\ \mu$ .

Fructifications about 1 mm. high,  $200$ – $300\ \mu$  in diameter, covering areas 10 cm. or more in diameter.

On rotten wood. Alabama and Missouri. November.

This species may be only a small-spored form of *S. fasciculata* but it seems to me distinct by its fructifications becoming densely crowded and somewhat confluent, by the smaller spores, and by the hairs being slightly yellowish. It was distributed by Ravenel under the name *S. villosa*, with the European concept of which it does not agree. Where most densely crowded, the fructifications shrink apart in drying, showing bare areas of wood as in *S. polyporoidea* from which *S. conferta* differs in oblong

spores and larger, true, external hairs and less marked confluence of fructifications.

Specimens examined:

Exsiccati: Ravenel, Fungi Car. 5: 42, under the name *Solenia villosa*.

Alabama: *Peters*, in Ravenel, Fungi Car. 5: 42.

Missouri: Meramec Highlands, *L. O. Overholts*, type (in Mo. Bot. Gard. Herb., 14505).

5. *S. filicina* Peck, N. Y. State Mus. Rept. 28: 52. 1876; Sacc. Syll. Fung. 6: 426. 1888.

An *S. villosa* Fr? var., Bourdot & Galzin, Soc. Myc. Fr. Bul. 26: 225. 1910?

Type: in N. Y. State Mus. Herb.

"Cups springing from an ochraceous, white-margined, tomentose subiculum, elongated, clavate or cylindrical, deflexed, clothed with appressed hairs or tomentum, ochraceous; spores hyaline, broadly fusiform, containing one or two nuclei," even,  $10-11 \times 4\frac{1}{2} \mu$ ; basidia simple.

Fructifications about 250-350  $\mu$  in diameter.

Base of living fern stems. Lake Pleasant, New York. August.

Peck noted that the basal part of the cups sometimes turns brown and shrinks in drying so that they appear stipitate. In the course of nearly fifty years, the subiculum and cups have become clay color with the margin paler. The hairs clothing the fructifications are only very slightly colored, even, flexuous,  $75-85 \times 3-3\frac{1}{2} \mu$ , tapering to a sharp tip; the spores are not curved but straight, with equal sides, tapering to both base and apex.

Specimens examined:

New York: Lake Pleasant, *C. H. Peck*, type (in N. Y. State Mus. Herb.).

6. *S. sulphurea* Saccardo & Ellis, *Michelia* 2: 564. 1882; Sacc. Syll. Fung. 6: 426. 1888.

Type: probably in Saccardo Herb., and N. Y. Bot. Gard. Herb.

Fructifications gregarious, sometimes rather crowded and up to 2-3 to a mm., cup-shaped, short-stemmed, sulphur-colored,

fading in the herbarium, strigose-pilose, the margin whitish fringed; hairs minutely rough, flexuous,  $75-90 \times 4-4\frac{1}{2} \mu$ , sharp-pointed; spores hyaline, even, subglobose,  $6-7\frac{1}{2} \mu$  in diameter, copious.

Fructifications  $250-400 \mu$  in diameter and of about the same height.

On dead places in living trunk of *Magnolia glauca*. Newfield, New Jersey. January and April. Apparently local.

The specimens which I have seen were collected forty years ago and now show only traces of the original color, which is noted on the packets as "yellowish white when fresh, with white fringed margin, and disk white or nearly so." The larger globose spores should distinguish this species from *Cyphella sulphurea* and *C. laeta*.

Specimens examined:

New Jersey: Newfield, *J. B. Ellis*, four gatherings (in N. Y. Bot. Gard. Herb., Burt Herb., and Mo. Bot. Gard. Herb., 61697-61700).

7. *S. anomala* (Pers.) Fuckel, Symb. Myc., App. 1: 290. 1872; Fries, Hym. Eur. 596. 1874; Sacc. Syll. Fung. 6: 427. 1888; Bourdot & Galzin, Soc. Myc. Fr. Bul. 26: 227. 1910; Rea, Brit. Basid. 702. 1922.

*Peziza anomala* Persoon, Obs. Myc. 1: 29. 1796; Syn. Fung. 656. 1801; Fries, Syst. Myc. 2: 106. 1823.—*P. stipata* Persoon, Myc. Eur. 1: 270. 1822.—*Solenia ochracea* Hoffmann, Deutschl. Fl. 2: pl. 8, f. 2. 1795; Persoon, Syn. Fung. 675. 1801; Myc. Eur. 1: 334. 1822; Fries, Syst. Myc. 2: 201. 1823; Hym. Eur. 596. 1874; Morgan, Cincinnati Soc. Nat. Hist. Jour. 9: 8. 1886; Sacc. Syll. Fung. 6: 425. 1888; Karsten, Finska Vet.-Soc. Bidrag Natur och Folk 48: 283. 1889; Bourdot & Galzin, loc. cit.—*S. anomaloides* Peck, Torr. Bot. Club Bul. 25: 326. 1898; Sacc. Syll. Fung. 16: 173. 1902.—*S. anomala* var. *ochracea* (Hoffm.) Berk. in Rea, loc. cit.—An *S. confusa* Bresadola, Ann. Myc. 1: 84. 1903?

Fructifications drying Dresden brown, snuff-brown, or Rood's brown, turbinate or pyriform, crowded or scattered, clothed with thick-walled hairs  $2\frac{1}{2}-3 \mu$  in diameter which give their color

to the fructifications and at the apex of the fructifications are often rough-walled near their tips; hymenium paler, urceolate, the margin incurved; basidia simple, with 4 sterigmata; spores hyaline, even, cylindric, curved,  $6-11 \times 1\frac{1}{2}-4\frac{1}{2} \mu$ .

Fructifications in dried condition  $\frac{1}{2}$ -1 mm. high, 200-300  $\mu$  in diameter, where crowded 3-4 to a mm.

Usually crowded into small areas on pustules or crevices in the bark of dead twigs of *Alnus*, *Prunus*, *Quercus*, *Betula*, *Salix*, etc., or covering broad areas of decorticated wood, fewer and more scattered when the wood is very rotten. Throughout Europe, Newfoundland to Louisiana, westward to Oregon and British Columbia, and in Porto Rico. August to May. Common.

European specimens of *S. anomala* in the exsiccati cited below have somewhat larger spores than those of gatherings from eastern United States but do not differ at all from those of the extreme West. Those from British Columbia have spores  $7-10 \times 4-4\frac{1}{2} \mu$  and hairs rough near the tips, agreeing in both respects with the Westendorp distribution from Belgium. In one Colorado and one Montana gathering the spores are 3  $\mu$  thick, as in those of the Berkeley and the Libert distributions, and in another Colorado specimen  $3-3\frac{1}{2} \mu$  thick as in the Cavara distribution. They are  $2\frac{1}{2} \mu$  thick in two Montana gatherings and in the Rabenhorst distribution, although many of the latter are only 2  $\mu$  thick as is the usual thickness of spores of New York and New England gatherings. In my opinion these spore differences do not warrant specific distinction, and I doubt furthermore whether *S. confusa* of Europe, separated from *S. anomala* on the sole ground of spores  $7-10 \times 2-2\frac{1}{2} \mu$ , is really distinct from the latter. The distributions by Berkeley, Libert, and Cavara are true intermediates.

Specimens examined:

Exsiccati: Bartholomew, Fungi Col., 2085, under the name *S. ochracea*; Berkeley, Brit. Fungi, 260; Cavara, Fungi Longobardiae, 108; Cooke, Fungi Brit., 405, under the name *S. ochracea*; Desmazières, Crypt. France, 1059; Ellis, N. Am. Fungi, 611, under the name *S. ochracea*; Reliquiae Farlowianae, 363; Karsten, Fungi Fenniae Exs., 7; Kunze, Fungi Sel. Exs., 301; Libert, Pl. Crypt. Arduennae, 227; Rabenhorst, Herb.

- Myc., 307; Ravenel, *Fungi Car.* 4: 7; Saccardo, *Myc. Veneta*, 1407, 1408; Sydow, *Fungi Exotici*, 323; Westendorp, *Herb. Crypt. Belge*, 398.
- Finland: *P. Karsten*, in *Karsten, Fungi Fenniae Exs.*, 7.
- Sweden: Tyroso, *L. Romell, No. A in part.*
- Germany: Dresden, in *Rabenhorst, Herb. Myc.*, 307.
- Austria: Sonntagberg, *P. Strasser* (in *Mo. Bot. Gard. Herb.*, 42683).
- Switzerland: *G. Winter*, in *Kunze, Fungi Sel. Exs.*, 301.
- Italy: Padua, in *Cavara, Fungi Longobardiae*, 108; in *Saccardo, Myc. Veneta*, 1407, 1408.
- France: in *Desmazières, Crypt. France*, 1059; in *Libert, Pl. Crypt. Arduennae*, 227.
- Belgium: Bruges, in *Westendorp, Herb. Crypt. Belge*, 398.
- England: in *Berkeley, Brit. Fungi*, 260; *Shrewsbury, W. Phillips*, in *Cooke, Fungi Brit.*, 405, under the name *S. ochracea*.
- Newfoundland: Bay of Islands, *A. C. Waghorne* (in *Mo. Bot. Gard. Herb.*, 4601).
- Canada: Ontario, Kenora, *A. H. R. Buller*, 559 (in *Mo. Bot. Gard. Herb.*, 58979); London, *J. Dearness*, in *Bartholomew, Fungi Col.*, 2085, and *Sydow, Fungi Exotici*, 323.
- Maine: Kittery Point, *R. Thaxter & E. A. Burt*.
- Vermont: Middlebury, *E. A. Burt*, three collections.
- Massachusetts: Arlington, *E. A. Burt*; Cambridge, *M. A. Barber*; Milton, *H. Webster*, 800; Newton, *M. A. Barber* (in *Mo. Bot. Gard. Herb.*, 3913); Sharon, *W. G. Farlow* (in *Mo. Bot. Gard. Herb.*, 62749); *A. P. D. Piquet*, in *Reliquiae Farlowianae*, 363.
- New York: Bronx Park, *W. A. Murrill* (in *N. Y. Bot. Gard. Herb.*, and *Mo. Bot. Gard. Herb.*, 61688); Syracuse, *A. H. W. Povah*, 890 (in *Mo. Bot. Gard. Herb.*, 58175); *L. M. Underwood* (in *N. Y. Bot. Gard. Herb.*, and *Mo. Bot. Gard. Herb.*, 61690); White Plains, *L. M. Underwood* (in *Mo. Bot. Gard. Herb.*, 61687).
- Pennsylvania: Bethlehem, *Ellis & Harkness*, in *Ellis, N. Am. Fungi*, 611.
- South Carolina: *H. W. Ravenel*, in *Ravenel, Fungi Car.* 4: 20.
- Louisiana: St. Martinville, *A. B. Langlois*.

Michigan: *Beal*, 214, type of *Solenia anomaloides* (in N. Y. State Mus. Herb.).

Iowa: Webster County, *O. M. Oleson*, 446 (in Mo. Bot. Gard. Herb., 14556); Woodbine, *Humphrey & Edgerton*, comm. by C. J. Humphrey, 6510 (in Mo. Bot. Gard. Herb., 42920).

Missouri: Concordia, *Demetrio* (in Mo. Bot. Gard. Herb., 4592); Creve Coeur, *S. M. Zeller*, 1567 (in Mo. Bot. Gard. Herb., 55567).

Nebraska: Lincoln, *L. B. Walker* (in Mo. Bot. Gard. Herb., 55016).

Colorado: Geneva, *F. J. Seaver & E. Bethel* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61692); Tolland, *F. J. Seaver & E. Bethel* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61691).

Montana: Choteau, *J. A. Hughes*, comm. by J. R. Weir, 5489 (in Mo. Bot. Gard. Herb., 55947); Helena, *F. D. Kelsey* (in Mo. Bot. Gard. Herb., 62750); Missoula, *J. R. Weir*, 424 (in Mo. Bot. Gard. Herb., 22430); Sheridan, *Miss Fitch* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61689).

Oregon: Corvallis, *S. M. Zeller*, 2064 (in Mo. Bot. Gard. Herb., 57504).

British Columbia: Sidney, *J. Macoun*, 67 (in Mo. Bot. Gard. Herb., 5745); Victoria, *J. Macoun*, 563 (in Mo. Bot. Gard. Herb., 55308).

Porto Rico: Rio Piedras, *J. A. Stevenson & R. C. Rose*, 6532 (in Mo. Bot. Gard. Herb., 55657).

Jamaica: Chester Vale, *W. A. & E. L. Merrill*, 347, comm. by N. Y. Bot. Gard. Herb.

8. *S. cinerea* Burt in Millspaugh & Nuttall, *Flora Santa Catalina Island*, 315. 1922.

Type: in Field Mus. Nat. Hist. Herb. and Mo. Bot. Gard. Herb.

Fructifications cespitose, 30–100 in dense circular clusters on cracks and pustules of the bark, short-stipitate, cylindric-clavate or pyriform, pallid neutral gray of Ridgway, minutely hairy, the apex obtuse and pore nearly closed; surface hairs colored, flexuous,  $100 \times 3\frac{1}{2} \mu$ , paler towards the tips and there rough-

walled; basidia simple,  $30 \times 6 \mu$ , with 4 slender sterigmata; spores hyaline, even, cylindric or slightly curved,  $7\frac{1}{2}$ – $10 \times 4$ – $5\frac{1}{2} \mu$ , usually  $9 \times 5\frac{1}{2} \mu$ .

Fructifications  $700 \mu$  high,  $200$ – $300 \mu$  in diameter.

On bark of rotting oak. California. May.

The fructifications are colored like those of *S. poriaeformis* but in other respects are more like *S. anomala* when growing on pustules and crevices of the bark.

Specimens examined:

California: Avalon, Santa Catalina Island, L. W. Nuttall, 396, type (in Field Mus. Nat. Hist. Herb., and Mo. Bot. Gard. Herb., 57610).

9. *S. poriaeformis* (Pers.) Fries, Hym. Eur., 597. 1874; Winter in Rabenhorst, Krypt.-Fl. 1: 391. 1884; Bourdot & Galzin, Soc. Myc. Fr. Bul. 26: 226. 1910.

*Peziza poriaeformis* Pers.  $\gamma$  of *Peziza anomala* Pers. Syn. Fung. 656. 1801.—*P.?* *poriaeformis* (Pers.) De Candolle, Fl. France 6: 26. 1815; Fries, Syst. Myc. 2: 106. 1823.—*P. tephrosia* Pers. Myc. Eur. 1: 271. 1822.—*Solenia poriaeformis* (DC.) Fuckel, Symb. Myc. App. 1: 290. 1872.—Sacc. Syll. Fung. 6: 428. 1888; Coker, Elisha Mitchell. Scientif. Soc. Jour. 36: 151. pl. 15, pl. 30. f. 4–6. 1921; Rea, Brit. Basid. 703. 1922.—An *Peziza pruinata* Schweinitz, Naturforsch. Ges. Leipzig Schrift. 1: 120. 1822?—An *P. Daedalea* Schweinitz, Am. Phil. Soc. Trans. N. S. 4: 174. 1832?

Illustrations: Brefeld, Untersuch. Myk. 7: pl. 11, f. 21. 1888; Coker, loc. cit.

Fructifications about 1 mm. high, cinereous, light neutral gray or hair-brown, cup-shaped, sessile, hairy, more or less crowded, 2–4 to a mm., seated on a grayish mycelium; hymenium pale gray, concave; flesh thin, brownish; basidia simple, with 2–4 sterigmata; spores hyaline, even, subglobose,  $4\frac{1}{2}$ – $6\frac{1}{2} \times 4\frac{1}{2}$ – $5 \mu$ .

On decaying limbs and logs of frondose species. Europe, New Jersey to Alabama, and in Minnesota. April to January. Infrequent.

This species covers small areas 1–3 cm. long by  $\frac{1}{2}$ –1 cm. broad on bark of oak, birch, maple, grape, etc. It has the aspect of a

cinereous, crustaceous lichen bearing numerous small apothecia. It is distinguished from *S. subporiaeformis* by larger cups and more globose spores. I failed to study the authentic specimens of *Peziza Daedalea* Schw. and *Peziza pruinata* Schw. when there was an opportunity.

Specimens examined:

Exsiccati: Ell. & Ev., N. Am. Fungi, 2317; Jaap, Fungi Sel. Exs., 65; Ravenel, Fungi Car. 1: 38, under the name *Peziza pruinata* Schw.; Ravenel, Fungi Car. 1: 37, under the name *Peziza Daedalea* Schw.

Sweden: Femsjö, L. Romell.

Germany: Brandenburg, in Jaap, Fungi Sel. Exs., 65.

France: Aveyron, A. Galzin, 1784, comm. by H. Bourdot, 4747.

New Jersey: Newfield, J. B. Ellis, in Ell. & Ev., N. Am. Fungi, 2317.

Maryland: Takoma Park, C. L. Shear, 1087.

North Carolina: Chapel Hill, W. C. Coker, 4686 (in Mo. Bot. Gard. Herb., 57331).

South Carolina: H. W. Ravenel, in Ravenel, Fungi Car. 1: 37, 38.

Alabama: Auburn, F. S. Earle (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 57330).

Minnesota: Vermilion Lake, E. W. D. Holway (in U. S. Dept. Agr. Herb., Burt Herb., and Mo. Bot. Gard. Herb., 4800), and J. C. Arthur, L. H. Bailey & E. W. D. Holway, 2548 (in Mo. Bot. Gard. Herb., 4599).

10. *S. subporiaeformis* Burt, n. sp.

Type: in Farlow Herb. and Mo. Bot. Gard. Herb.

Fructifications spherical, 120–150  $\mu$  in diameter, 4–5 to a mm., nearly buried in the pale neutral gray subiculum, with the white mouths and adjacent portion of the wall protruding; mouth about 60–80  $\mu$  in diameter; hymenium black as seen from above, the subhymenium opaque, nearly black; basidia simple, pyriform, 9–12  $\times$  5–6  $\mu$ ; spores hyaline, even, flattened on one side, 5–6  $\times$  3  $\mu$ .

Fructifications in small patches 4  $\times$  3 cm., 3  $\times$  2 cm., and 3  $\times$  1½ cm. in the three specimens collected.

On decorticated, very rotten wood. Margarita Island, Venezuela. July.

This species is closely related to *S. poriaeformis*, but may be distinguished from the latter by smaller, partially buried fructifications, smaller basidia, and smaller spores of elongated rather than subglobose form. It may possibly range farther north into the West Indies.

Specimens examined:

Venezuela: Margarita Island, A. F. Blakeslee, type (in Farlow Herb., and Mo. Bot. Gard. Herb., 56064).

11. *S. endophila* (Ces.) Fries, Hym. Eur. 705. 1874; Sacc. Syll. Fung. 6: 427. 1888.

*Cyphella endophila* Cesati in Rabenhorst, Fungi Eur., 1513, with description. 1872; Mattiolo, Accad. Scienze Torino Atti 22:—pl. 4. 1887.

Type: type distribution in Rabenhorst, Fungi Eur., 1513.

Fructifications densely crowded together, curving upward from a continuous carpet (often evanescent) of short, suberect, colored hyphae, furfuraceous-villose, at first whitish, becoming ochraceous when old, attenuated towards the base into a short stem; the disk rather pale; hairs colored, even, flexuous,  $40-45 \times 3-4\frac{1}{2} \mu$ ; basidia simple,  $12-14 \times 4\frac{1}{2}-5 \mu$ ; spores colored, even,  $6-7 \times 4-5 \mu$ , copious.

Fructifications 1 mm. long,  $200-300 \mu$  in diameter, usually somewhat scattered but crowded in some places up to 2-3 to a mm.

On rotten, decorticated wood and bark of *Populus* and other frondose species. Southern Europe, Maine, Vermont, Florida, Colorado, and South America. August to March. Rare.

A great deal of powdery matter covers the hairy fructification and is the cause of its whitish color. *S. endophila* is readily distinguished from our other species by its colored spores.

Specimens examined:

Exsiccati: Rabenhorst, Fungi Eur., 1513, type distribution; Theissen, Dec. Fung. Brasiliun, 165.

Italy: Cesati, in Rabenhorst, Fungi Eur., 1513.

Maine: Kittery Point, R. Thaxter, comm. by W. G. Farlow, 1 (in Mo. Bot. Gard. Herb., 43804).

Vermont: Middlebury, *E. A. Burt*.

Florida: Palm Beach, *R. Thaxter*, comm. by Farlow Herb., 247 (in Mo. Bot. Gard. Herb., 63046).

Colorado: Denver, *F. J. Seaver* & *E. Bethel* (in N. Y. Bot. Gard. Herb., Burt Herb., and Mo. Bot. Gard. Herb., 61695).

Venezuela: Margarita Island, *A. F. Blakeslee*, comm. by Farlow Herb. (in Mo. Bot. Gard. Herb., 56067).

Brazil: *Rick*, in Theissen, Dec. Fung. Brasiliun, 165.

#### SPECIES IMPERFECTLY KNOWN

12. *S. gracilis* Copeland, Ann. Myc. 2: 508. 1904; Sacc. Syll. Fung. 21: 362. 1912.

"Sparsa; cupulis primo urceolatis, brevissime stipitatis, demum cylindraceis, denique late sessilibus, sursum attenuatis, oribus incrassatis, integris, glabris, stramineis nitentibus, vel candidis et deorsum fuscescentibus, 0.5 mm. altis; sporis globosis, 7.5–8  $\mu$  diam.

"Ad lignum putridum *Alni*. Saratoga." [California.]

13. *S. villosa* Fries, Syst. Myc. 2: 200. 1823; Hym. Eur. 596. 1874; Schweinitz, Am. Phil. Soc. Trans. N. S. 4: 180. 1832; Sacc. Syll. Fung. 6: 425. 1888.

Fructifications gregarious, cylindric, villose, white. Related to the preceding species (*S. candida*, *S. fasciculata*, *S. pallens*) but a little larger, distinctly villose, by this approaching *S. ochracea*. On fallen rotten wood.

The above is a translation of the original description, to which I have found no distinctive additions from later European research. The description is given here because American mycologists have so frequently referred gatherings to *S. villosa*, a species which seems to be imperfectly known in its own country.

#### MATRUCHOTIA, MICROSTROMA, PROTOCORONOSPORA

*Matruchotia varians* Boulanger, Rev. Gen. Bot. 5: 401. pl. 12–14. 1893; Rev. Myc. 16: 68. pl. 142–144. 1894. Sacc. Syll. Fung. 11: 118. 1895.

Under the above name Boulanger described as a new genus and new species a fungus of soft consistency and aspect of the

*Hyalostilbeae* but having spores borne one or two to a sporophore—usually but one. This fungus appeared in cultures of the bark of *Piscidia erythrina*, used in pharmacy and obtained from South America northward to Florida. On account of sometimes two spores to a spore-bearing cell Boulanger would class *Matruchotia* as a Basidiomycete—as an intermediate connecting the Basidiomycetes with the Hyphomycetes and showing their phylogenetic origin from the latter.

The account and illustrations present *Matruchotia* as having an erect trunk composed of cohering hyphae, branched above, and bearing spores along the sides of the trunk and branches and at the tips of the final branchlets.

I am disposed to regard *Matruchotia* as a genus of the *Stilbiaceae* and do not attach great importance to the fact that the spores are sometimes in twos.

The range of *Matruchotia* is northward to Maine at least and on other kinds of wood than *Piscidia*, for while collecting at Kittery Point with Professor Thaxter we found plentifully there a soft, white, mucedinous fungus which he recognized as *Matruchotia*.

*Microstroma* Niessl, Mähr. Crypt. Fl., 163. 1861; Sacc. Syll. Fung. 4: 9. 1886; Engl. & Prantl, Nat. Pflanzenfam. (1:1\*\*): 105. 1898.

This genus is represented in North America by *M. albus*, *M. Juglandis*, *M. leucosporum*, *M. americanorum*, and *M. ingainicola*. The more frequent species occur as small white patches on living leaves of *Carya*, *Juglans*, *Quercus*, etc. Some authors have referred *Microstroma* to the Basidiomycetes on account of several spores being produced at the apex of the spore-bearing cell. R. Maire, Rec. publ. Occ. Jubilé sc. Prof. Le Monnier 131–139. 1913, concludes that *Microstroma* is not a Basidiomycete but one of the *Melanconieae*.

*Protocoronospora* Atkinson & Edgerton, Jour. Myc. 13: 186. 1907; Sacc. Syll. Fung. 21: 421. 1912; Wolf, Elisha Mitchell Scientif. Soc. Jour. 36: 82. 1920.

The type species, *Protocoronospora nigricans* Atk. & Edg., is a virulent parasite on all parts above ground, including the pods, of *Vicia sativa* and *V. villosa*. *Protocoronospora* was proposed as

a genus of the *Thelephoraceae* because the spores are borne in a whorl at the apex of the spore-bearing cell. Wolf, *loc. cit.*, has presented the morphology and development of *P. nigricans* and concludes that *Protocoronospora* is not a Basidiomycete but one of the *Melanconieae*, a conclusion in which I concur.

#### ASTEROSTROMA

*Asterostroma* Masee, Linn. Soc. Bot. Jour. 25: 154. pl. 46, f. 8, 9. 1889; Sacc. Syll. Fung. 9: 236. 1891; Engl. & Prantl, Nat. Pflanzenfam. (1:1\*\*): 122. 1898; Bourdot & Galzin, Soc. Myc. Fr. Bul. 36: 44. 1920.

Fructifications resupinate, effused, dry, composed of loosely interwoven hyphae, some of which terminate in brown, stellate organs composed of slender rays; basidia simple, with 2-4 sterigmata; spores hyaline.

The species of *Asterostroma* are likely to be referred to *Corticium* unless sections are examined. In sections the brown, stellate organs are conspicuous when viewed with the microscope and sharply separate *Asterostroma* from other resupinate thelephora-ceous fungi. Similar organs occur, however, in *Asterodon* of the *Hydnaceae* and in a species of *Lachnocladium*.

#### KEY TO THE SPECIES

- No colored hyphae present in the subiculum.....1
- Some colored hyphae in subiculum.....6. *A. ochrostroma*
  - 1. Spores becoming echinulate.....2
  - 1. Spores even.....3
- 2. Stellate organs with unbranched rays as a rule.....1. *A. cervicolor*
- 2. Many stellate organs have some rays branched.....2. *A. muscicolum*
  - 3. Hymenium drying whitish; no cystidia; rays  $3\frac{1}{2}$ - $4\frac{1}{2}$   $\mu$  in diameter.....3. *A. bicolor*
  - 3. Like *A. bicolor* except that rays up to  $130 \times 9$   $\mu$  protrude beyond hymenium, like setae.....4. *A. spiniferum*
  - 3. Stellate organs have notably long, slender rays up to  $100$ - $150 \times 3$ - $3\frac{1}{2}$   $\mu$ ; fructification not spongy.....5. *A. gracile*

1. *Asterostroma cervicolor* (Berk. & Curtis) Masee, Linn. Soc. Bot. Jour. 25: 155. 1889; Sacc. Syll. Fung. 9: 237. 1891; Bourdot & Galzin, Soc. Myc. Fr. Bul. 36: 44. 1920.

*Corticium cervicolor* Berk. & Curtis, Grevillea 1: 179. 1873; Sacc. Syll. Fung. 6: 621. 1888.—*Asterostroma corticola* Masee, Linn. Soc. Bot. Jour. 25: 155. 1889; Sacc. Syll. Fung. 9: 236.

1891.—*A. albido-carneum* Masee, Linn. Soc. Bot. Jour. 25: 155. pl. 46. f. 8, 9. 1889. Not *Thelephora albido-carnea* Schweinitz, Am. Phil. Soc. Trans. N. S. 4: 169. 1832.—*A. pallidum* Morgan, Cincinnati Soc. Nat. Hist. Jour. 18: 38. pl. 1, f. 6. 1895; Sacc. Syll. Fung. 14: 223. 1899.

Type: in Kew Herb. and Curtis Herb.

Fructification effused, thin, spongy, dry, avellaneous to cinnamon-drab within, the margin fibrillose-floccose, paler; hymenium even, pulverulent, becoming pallid where well-fruited; structure in section 150–300  $\mu$  thick, composed of thin-walled, loosely arranged, hyaline hyphae 2–2½  $\mu$  in diameter and of conspicuous, colored, thick-walled, rigid, stellate organs with 3–7, usually about 5, unbranched rays 15–60  $\mu$  long and 3–3½  $\mu$  in diameter, distributed throughout the fructification; cystidia (gloeocystidia?) fusoid, often sharp-pointed, not incrustated, 30–45  $\times$  8–12  $\mu$ , protruding up to 25  $\mu$  above the basidia; basidia simple, with 4 sterigmata; spores white in spore collections, spherical, becoming echinulate, with the spore body 4–5  $\mu$  in diameter.

On decaying wood, earth, and on outside of a flower pot. Canada to Louisiana, in Washington, California, Mexico, West Indies, and Japan. July to March. Widely distributed but not abundant.

The color of this species varies somewhat with the presence and degree of development of the hymenium; young fructifications still lacking basidia or with only few scattered basidia have a tawny color due to the numerous colored stellate bodies which are present in the surface of the fructification. As the hymenium becomes continuous in patches or over the whole surface it conceals the stellate organs and shows as a whitish or pallid pellicle in the regions where developed, with comparatively few colored rays protruding through it. The type specimen of *A. pallidum* has the hymenium fully developed. Under my method of staining sections with eosin and then preserving in glycerine mounts, the fusoid organs in the hymenium are what I understand as non-incrustated cystidia containing little granular matter, a great deal of cell sap, and with such thin walls that they collapse in the glycerine preparations. Bourdot has a special reagent and method which he employs as a test for gloeocystidia, and he has decided that these organs are gloeocystidia.

The specimens of *A. ochroleuca* Bres. from France, communicated by Bourdot, seem to me specifically distinct from our *A. cervicolor* by their lack of the continuous, whitish hymenial pellicle and the abundant rays in the hymenial surface being well branched so that very many of them resemble antlers rather than stellate organs.

Specimens examined:

Exsiccati: Ravenel, Fungi Am., 228, under the name *Corticium cervicolor*; Ravenel, Fungi Car. 4: 14, type distribution of *Asterostroma albido-carneum* Masee, under the name *Corticium albido-carneum* but not the species of Schweinitz.

Canada: St. Lawrence Valley, *J. Macoun*, 18.

New Hampshire: Chocorua, *E. A. Burt*, two collections; *W. G. Farlow*, 2a, 2b, an unnumbered specimen in Burt Herb., and 2, 3, 155 and an unnumbered specimen (in Mo. Bot. Gard. Herb., 55601, 55602, 55246, and 6883 respectively).

Massachusetts: Belmont, *W. G. Farlow*.

New York: Albany, *H. D. House & J. Rubinger* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 6327); East Galway, *E. A. Burt*.

Pennsylvania: Bethlehem, *Schweinitz* (in Herb. Schweinitz under the names *Thelephora reticulata* and *Thelephora mollis*).

District of Columbia: Washington, *J. R. Weir*, 19741 (in Mo. Bot. Gard. Herb., 59167).

South Carolina: *H. W. Ravenel*, in Ravenel, Fungi Car. 4: 14.

Georgia: Darien, *H. W. Ravenel*, in Ravenel, Fungi Am., 228.

Florida: *W. W. Calkins*, 150, comm. by *W. G. Farlow* (in Mo. Bot. Gard. Herb., 44635); Cutler Hammock, *W. A. Merrill*, 85 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 62104).

Alabama: *Peters*, type of *Corticium cervicolor* (in Curtis Herb., 4026, and Kew Herb.); Montgomery County, *R. P. Burke*, 110 and 311 (in Mo. Bot. Gard. Herb., 19896 and 57185 respectively).

Louisiana: St. Martinville, *A. B. Langlois*, cx, 1948, 203 (in Burt Herb., Lloyd Herb., 3144, and Mo. Bot. Gard. Herb., 55621).

Ohio: Cincinnati, *C. G. Lloyd*.

Idaho: Priest River, *J. R. Weir*, 581 (in Mo. Bot. Gard. Herb., 63172).

Washington: Hoquiom, *C. J. Humphrey*, 6411.

California: *A. J. McClatchie*, type of *Asterostroma pallidum* (in Kew Herb., and Mo. Bot. Gard. Herb., 4792).

Mexico: Xuchiles, near Cordoba, *W. A. & E. L. Merrill*, 1206, 1212, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54593 and 54594 respectively); near Guernavaca, *W. A. & E. L. Merrill*, 516, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54517); Jalapa, *W. A. & E. L. Merrill*, 300, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54444).

Porto Rico: Central Alianga, *J. A. Stevenson*, 6071 (in Mo. Bot. Gard. Herb., 54684); Rio Piedras, comm. by Mrs. F. W. Patterson.

Japan: Awaji, Mt. Mikuma, *A. Yasuda*, 38 (in Mo. Bot. Gard. Herb., 56170).

2. *A. muscicolum* (Berk. & Curtis) Masee, Linn. Soc. Bot. Jour. 25: 155. 1889.

*Hymenochaete muscicola* Berk. & Curtis, Linn. Soc. Bot. Jour. 10: 334. 1868; Sacc. Syll. Fung. 6: 602. 1888.

Type: in Kew Herb. and Curtis Herb.

Fructification broadly effused, thin, spongy, dry, wood-brown of Ridgway, the margin narrow, whitish; hymenium concolorous with the subiculum or but slightly paler, even; in structure in section 300–400  $\mu$  thick, composed of thin-walled, loosely arranged hyaline hyphae and of very numerous, colored, stellate organs with 3–9 rays, the rays about  $30\text{--}45 \times 3\text{--}4\frac{1}{2}$   $\mu$ , sometimes unbranched but many branched, becoming smaller and more branched towards, and in, the hymenium and bearing secondary whorls of small branches or with 2 stellate organs connected by a short, thick axis; cystidia few, not incrusted, 6  $\mu$  in diameter, protruding up to 27  $\mu$ , tapering to a sharp point; spores hyaline, spherical, echinulate, the body 5–7  $\mu$  in diameter, the spines numerous, close together, very distinct.

Fructifications up to  $7 \times 4$  cm. when well developed.

On dead branches of trees covered with moss, on cocoanut

petioles, and on rotting wood. West Virginia, Arkansas, Louisiana, and the West Indies. July to December.

*A. muscicolum* has so many tough, stellate organs that it is not easy to cut sections free hand which are thin enough to show clearly the details of the hymenium; it differs in this respect from *A. cervicolor* and also by the very numerous, branched rays and the thicker-walled spores covered with stouter and more numerous spines.

Specimens examined:

West Virginia: Eglon, *C. G. Lloyd*, 1457 (in Mo. Bot. Gard. Herb., 55611).

Louisiana: *Dr. Hale* (under the name *Stereum Halei* in Kew Herb. and Curtis Herb., 3660); St. Martinville, *A. B. Langlois*, 2703.

Arkansas: Fordyce, *C. J. Humphrey*, 2530 (in Mo. Bot. Gard. Herb., 11952).

Cuba: *C. Wright*, 253, type of *Hymenochaete muscicola* (in Kew Herb. and Curtis Herb.); Ceballos, *C. J. Humphrey*, 2579 (in Mo. Bot. Gard. Herb., 14841); Habana Province, Fecha, *F. S. Earle*, 141.

Grenada: Grand Etang, *R. Thaxter*, comm. by *W. G. Farlow*, 15.

3. *A. bicolor* Ellis & Everhart, Acad. Nat. Sci. Philadelphia Proc. 1893: 441. 1893; Sacc. Syll. Fung. 11: 128. 1895.

Type: in N. Y. Bot. Gard. Herb., U. S. Dept. Agr. Herb., and Burt Herb.

Effused, thin, avellaneous when fresh, the hymenium becoming whitish in the herbarium, the margin thin, cobwebby; in structure in section 200–300  $\mu$  thick, composed of loosely arranged, hyaline hyphae 2–2½  $\mu$  in diameter and of rather scattered—not crowded—colored, stellate organs with unbranched rays 45–120  $\mu$  long, 3½–4½  $\mu$  in diameter; no cystidia; basidia with 4 sterigmata; spores white in a spore collection, even, globose, apiculate at the base, 5–7  $\mu$  in diameter.

Fructifications 1–6 cm. long, 1–4 cm. broad.

On rotten wood of both frondose and coniferous species but more abundant on the latter. New York to Louisiana and westward to British Columbia. August to November.

Specimens of *A. bicolor* acquire in the herbarium the whitish hymenium of a well-fruited *A. cervicolor* from which they are only distinguishable by the even spores and the absence of cystidia. On the basis of the similar spores, I formerly referred to *A. bicolor* a small specimen collected in Sweden by Romell. Bourdot has recently sent to me from France several specimens, published by him under the name *A. laxum* Bres., which are identical in structure with the specimen from Romell and constantly distinct from our *A. bicolor* by having occasional cystidia and stellate organs with branched rays—so conspicuously branched in the hymenium as to approach antler form.

Specimens examined:

New York: Floodwood, *E. A. Burt*.

Delaware: Wilmington, *Commons*, 2356, type (in N. Y. Bot. Gard. Herb., U. S. Dept. Agr. Herb., and Burt Herb.).

Maryland: Glen Sligo, *C. L. Shear*, 1141.

Louisiana: St. Martinville, *A. B. Langlois*, *ac*.

Kentucky: Crittenden, *C. G. Lloyd* (in Lloyd Herb., 1401, 1425, and Mo. Bot. Gard. Herb., 55616 and 55617 respectively).

Illinois: Christopher, *C. J. Humphrey*, 1991 (in Mo. Bot. Gard. Herb., 59018).

British Columbia: Kootenai Mts., near Salmo, *J. R. Weir*, 454, 495, 520, 541 (in Mo. Bot. Gard. Herb., 13274, 21977, 19438, and 3774 respectively).

4. *A. spiniferum* Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructifications effused, with the subiculum avellaneous and the hymenium pale pinkish buff; in structure 300–350  $\mu$  thick, with hyphae hyaline, arranged longitudinally along the substratum and passing into a loosely arranged layer and becoming intermixed with the colored, stellate organs; stellate organs not densely crowded together, with unbranched rays 50–90  $\times$  6–7  $\mu$  usually, but next to the hymenium having rays perpendicular to the latter, larger than the other rays, up to 130  $\times$  9  $\mu$ , and protruding beyond the basidia up to 110  $\mu$ , like setae; cystidia not incrusted, 25  $\times$  5  $\mu$ , sparingly present; spores hyaline, even, subglobose, 5–6  $\mu$  in diameter.

Fructifications up to 4 cm. long, 2 cm. broad.

On rotten wood. Porto Rico. July.

This species is related to *A. bicolor* but is distinct from the latter and noteworthy by the very large, unsymmetrical, seta-like rays which stand out above the general level of the hymenium. The occasional cystidia are an additional separating character.

Specimens examined:

Porto Rico: Rio Piedras, J. A. Stevenson, 5579, type (in Mo. Bot. Gard. Herb., 13415).

5. *A. gracile* Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructifications effused, very thin, cobwebby, delicate, with the subiculum light drab and the hymenium pale olive-buff, not continuous but with the basidia in clusters; in structure 150  $\mu$  thick, with hyphae loosely arranged, hyaline, 2-2½  $\mu$  in diameter, and with colored, stellate organs with central body 6  $\mu$  in diameter and very slender, unbranched rays up to 100-150  $\times$  3-3½  $\mu$ , often protruding beyond the hymenium up to 45  $\mu$ ; cystidia numerous, not incrusted, fusoid, 30  $\times$  8  $\mu$ ; basidia 15  $\times$  6  $\mu$ ; spores hyaline, even, spherical, 6  $\mu$  in diameter.

Fructifications ½-1 cm. in diameter.

On very rotten, frondose wood. Alabama. October.

The small gray fructifications of *A. gracile* have the aspect of a delicate, cobwebby Hyphomycete rather than the more compact, spongy structure of other species of this genus. The long, slender rays of the stellate organs and the cystidia are also distinctive.

Specimens examined:

Alabama: Montgomery County, R. P. Burke, 409, type (in Mo. Bot. Gard. Herb., 57202).

6. *A. ochrostroma* Burt, n. sp.

Type: in Mo. Bot. Gard. Herb., and Farlow Herb. probably.

Fructification effused, dry, felty, ochraceous tawny, with surface becoming shallowly granular in fruiting; in structure 200-300  $\mu$  thick, composed of both hyaline, thin-walled, flaccid hyphae 2  $\mu$  in diameter, and of some ochraceous, stiff, thick-walled hyphae 2  $\mu$  in diameter, and of very numerous, densely

crowded stellate organs of varying size; stellate organs with unbranched rays  $20-60 \times 3-6 \mu$  which protrude beyond the hymenium in such great numbers and so crowded as to nearly conceal the basidia; no cystidia found; basidia simple,  $10 \times 5 \mu$ , with 4 sterigmata, but few basidia found; floating spores in each preparation are hyaline, even,  $4-4\frac{1}{2} \times 3 \mu$ , neither copious nor seen attached to basidia.

Fructifications  $1-1\frac{1}{2}$  mm. long, about  $\frac{1}{2}$  mm. broad.

On bark and decorticated wood of *Abies*. New Hampshire. September.

*A. ochrostroma* differs from all other species of *Asterostroma* known to me by the presence in its subiculum of some slender, rigid, thick-walled hyphae of the same diameter as the usual, thin-walled hyphae but of the same color as the stellate organs. I find these colored hyphae more abundant in the sterile portions of the fructification; they have bleached in sections preserved for several years in glycerine mounts. The stellate organs are more numerous than in any other of our species and prevent cutting satisfactorily thin sections of the hymenium by free hand. Some hyaline, even spores  $4-4\frac{1}{2} \times 3 \mu$  were found floating in each preparation but not abundantly and are probably the spores of this species.

Specimens examined:

New Hampshire: Crystal Cascade, White Mts., *W. G. Farlow*, 1, type (in Mo. Bot. Gard. Herb., 55578).

(*To be continued*)

## EXPLANATION OF PLATE

## PLATE 1

Fig. 1. *Cladoderris dendritica*. *a*, showing upper side, collected in Cuba by W. A. & E. L. Merrill, 136; *b*, showing ribbed hymenium, collected in Colombia by W. D. Denton.

Fig. 2. *C. floridana*. Part of type, showing warts of hymenium, collected in Florida.

Fig. 3. *Skepperia spathularia*. After Patouillard.

Fig. 4. *Hypolyssus Montagnei*. *a*, collected in Bolivia by A. M. Bang; *b*, collected in Honduras by P. Wilson.

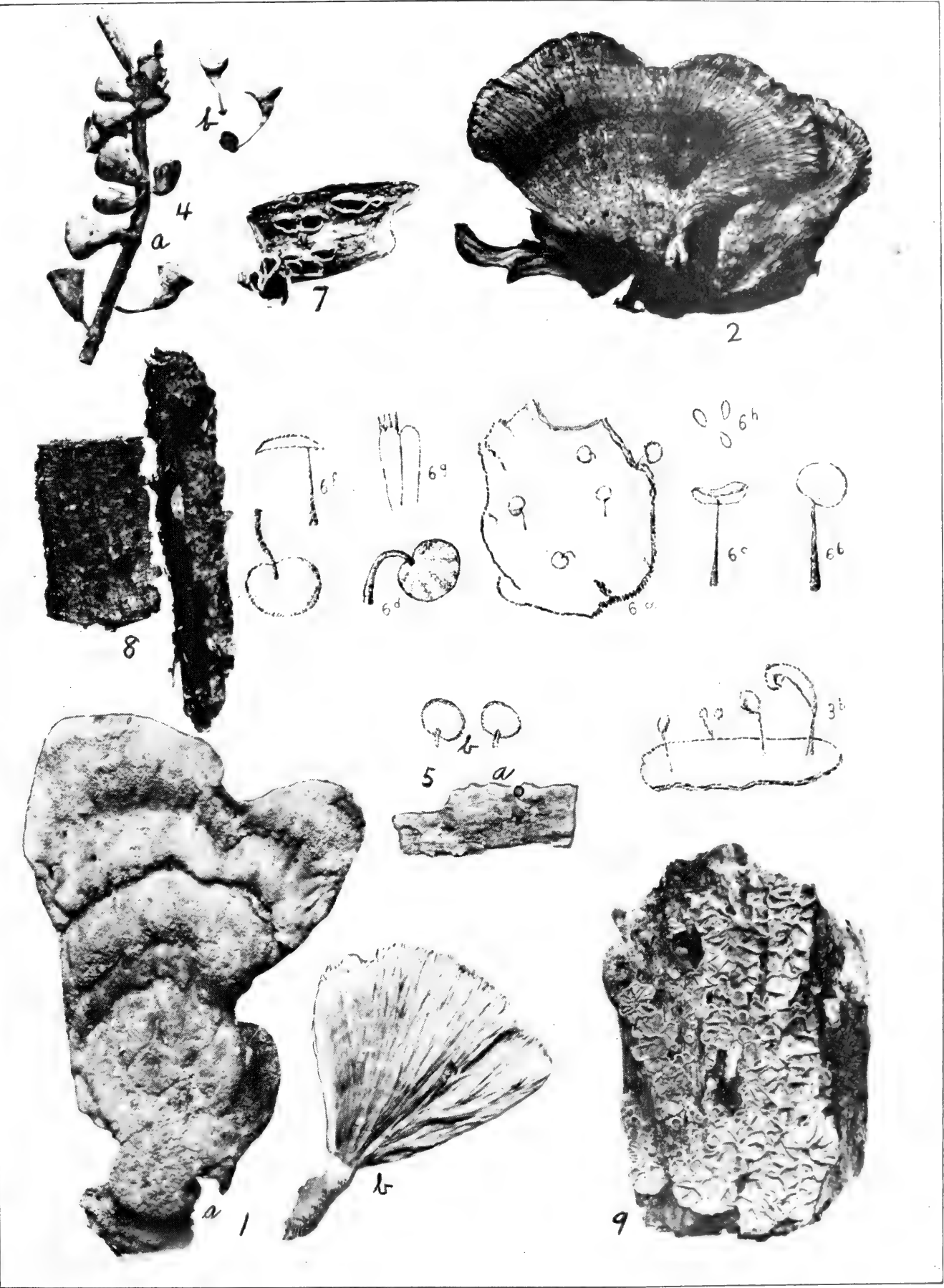
Fig. 5. *Cymatella pulverulenta*. *a*, piece of wood bearing several fructifications; *b*, 2 fructifications seen from under (hymenial) side, magnified, collected in Porto Rico by F. L. Stevens, 1358.

Fig. 6. *C. minima*. After Patouillard.

Fig. 7. *Cytidia flocculenta*. Collected in Montana by Mrs. L. A. Fitch.

Fig. 8. *C. salicina*. Showing both young, pezizoid and expanded fructifications, collected in Canada by J. Macoun.

Fig. 9. *C. tremellosa*. Collected in Louisiana by A. B. Langlois, 2620.



BURT—THELEPHORACEAE OF NORTH AMERICA

1. CLADODERRIS DENDRITICA.—2. C. FLORIDANA.—3. SKEPPERIA SPATHULARIA.  
—4. HYPOLYSSUS MONTAGNEI.—5. CYMATELLA PULVERULENTA.—6. C. MINIMA.  
—7. CYTIDIA FLOCCULENTA.—8. C. SALICINA.—9. C. TREMELLOSA.



# The Thelephoraceae of North America. XIV

Peniophora

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EDWARD ANGUS BURT

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## THE THELEPHORACEAE OF NORTH AMERICA. XIV<sup>1</sup>

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### PENIOPHORA

*Peniophora* Cooke, Grevillea 8: 20. pl. 122-125. 1879; Sacc. Syll. Fung. 6: 640. 1888; Masee, Linn. Soc. Bot. Jour. 25: 140. pl. 47, f. 14-19. 1889; Karsten, Finska Vet.-Soc. Bidrag Natur och Folk 48: 421. 1889; Engl. & Prantl, Nat. Pflanzenfam. (1:1\*\*): 119. 1898; Bourdot & Galzin, Soc. Myc. Fr. Bul. 28: 372. 1913; Burt, Mo. Bot. Gard. Ann. 1: 191, 193, 198. 1914; Rea, Brit. Basid. 687. 1922.—*Kneiffia* (in part) Bresadola, Ann. Myc. 1: 99. 1903.—Includes *Gloeopeniophora* v. Höhnelt & Litschauer, K. Akad. Wiss. Wien Sitzungsber. 116: 815. 1907.—Includes in part *Gloeocystidium* Karsten, Finska Vet.-Soc. Bidrag Natur och Folk 48: 429. 1889.

Fructifications waxy, coriaceous, cartilaginous, membranaceous, submembranaceous, floccose, or filamentous, always resupinate, effused, even; simple basidia with 2-4 white spores; cystidia incrustated or not incrustated, present in the hymenium and often more or less immersed in the substance; substance variously differentiated in some species but not containing colored, stellate organs.—Distinguished from *Corticium* by the presence of cystidia.

The North American species of *Peniophora* are here arranged in five groups according to the color of the substance of the fructification, nature of the cystidia, and presence or absence of gloeocystidia. These groups are further subdivided to such degree as

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seems desirable by color of hymenium, adnation to substratum, and incrustation of cystidia or of hyphae, into minor groups of so few species that the characters of the component species of any group within which a species seems to belong, may all be considered in determining the probable species of the specimen in course of identification. An appalling amount of time and labor has been required for the accumulation from sectional preparations of the structural characters of the individual specimens of species of *Peniophora* listed in this work. The older descriptions of resupinate Hymenomycetes were based on so few definite characters that a specimen in hand might seem to be referable equally well to more than one published species, or that several specimens in hand and certainly different specifically might all seem referable to one species, judging from its published description. However, by the addition of the knowledge of the definite features of structure characteristic of species, determining additional characters have been found for so many species that the specific taxonomy of the large genus *Peniophora* in North America becomes practicable. In the use of this work sectional preparations of fertile specimens are necessary.

Of the 120 species of *Peniophora* described herein, 36 occur in Europe as well as in North America and 11 others have been already recognized as North American species. The remaining 73 species are unlike those which the writer has been able to recognize among the known species from other regions of the world and have therefore to be described as new. It is quite probable that nearly all of these 73 species will bear the test of study by foreign mycologists and be demonstrated eventually to be really new, for most of them are of local occurrence, known from a single collection and distributed with surprising uniformity over the great area of North America which has in its different regions such great differences in temperature, moisture, altitude, and composition of its forests that the conditions are ideal for the origin and survival of species of merely local distribution. This is in accord with the fact that 9 of our new species occur in more than one state and that others occur as follows:—7 from Louisiana; 4 each from New York, British Columbia, Washington, Mexico, and Jamaica; 3 each from Vermont, Idaho, Oregon,

and Texas; 2 each from Canada, New Hampshire, Alabama, Florida, Colorado, and Porto Rico; and 1 each from Virginia, Georgia, Kentucky, Montana, Alaska, California, New Mexico, Nicaragua, Cuba, and Bermuda.

It might be well for American students who use this work for the determination of their gatherings of *Peniophora* to concentrate their attention in first attempts on the characters of the species of wide distribution and on such of the new species as are local in their respective regions.

Mycologists, with special knowledge of the *Thelephoraceae* in every nation, work not only to make better known the fungous floras of their own countries, but also to determine which of their species occur in other countries. As an aid to such study in the future and for checking my work, there is here given the following list of foreign species of *Peniophora*, not known to me except from the more or less satisfactory published descriptions, viz., *Peniophora abietis*, *P. amaniensis*, *P. atro-cinerea*, *P. avellanea*, *P. bambusicola*, *P. carneola*, *P. Cheesmanii*, *P. cineracea*, *P. citrina*, *P. coccinea*, *P. Coffeae*, *P. convolvens*, *P. Corsica*, *P. crustosa*, *P. diffissa*, *P. discoidea*, *P. Dussii*, *P. fimbriata*, *P. gigaspora*, *P. habgallae*, *P. leprosa*, *P. lilacea*, *P. Martelliana*, *P. mimica*, *P. ochroleuca*, *P. orphanella*, *P. pirina*, *P. rimicola*, *P. rufomarginata*, *P. sordidella*, *P. sororia*, *P. sparsa*, *P. subavellanea*, *P. subglebulosa*, *P. sublaevis*, *P. subtilis*, *P. tomentella*, *P. tremelloidea*, and *P. vermicularis*. It is probable that most of these species are of local interest but I should like to have been sure that I have not re-described any of them as new American species. Much time and effort have been required to make this list as small as it is.

#### KEY TO ARRANGEMENT OF THE SPECIES

##### I. Substance not colored, with the usual cystidia, no gloeocystidia.

###### 1. Hymenium white or whitish.

\*At least small pieces separable when moistened.

- |                                     |      |
|-------------------------------------|------|
| a. Cystidia incrusted . . . . .     | 1-7  |
| b. Cystidia not incrusted . . . . . | 8, 9 |

\*\*Closely adnate, not separable.

- |  |        |
|--|--------|
| a. Antler-shaped paraphyses not present.         |        |
| †Cystidia incrusted . . . . .                    | 10-13  |
| ††Cystidia rough-walled or denticulate . . . . . | 14, 15 |
| †††Cystidia not incrusted, even . . . . .        | 16-24  |
| b. Antler-shaped paraphyses present . . . . .    | 25-27  |

2. Hymenium colored and the subhymenium also in a few species.  
 \*Closely adnate, not separable.  
 a. Cystidia not incrustated.  
   †Fructification not stratosed. . . . . 28-30  
   ††Fructification becoming stratosed. . . . . 31, 32  
 b. Cystidia incrustated. . . . . 33-38  
 \*\*At least small pieces separable when moistened.  
 a. Cystidia incrustated.  
   †Hyphae incrustated. . . . . 39-44  
   ††Hyphae not incrustated or not obviously incrustated. . . . . 45-52  
 b. Cystidia not incrustated.  
   †Hyphae incrustated. . . . . 53-56  
   ††Hyphae not incrustated or not obviously incrustated. . . . . 57-61
- II. Substance not colored almost without exception, cystidia very long, cylindric, thick-walled, not normally incrustated, often visible through whole thickness of the fructification, no gloeocystidia—the *P. glebulosa* group. . . . . 62-68
- III. Substance not colored, gloeocystidia present as well as cystidia—the gloeocystidial group.  
 1. At least small pieces separable when moistened.  
   \*Cystidia incrustated.  
     †Some cystidia  $40-100 \times 20-50 \mu$ . . . . . 69  
     ††Cystidia of the usual size. . . . . 70-79  
   \*\*Cystidia not incrustated. . . . . 80-83  
 2. Closely adnate, not separable. . . . . 84-90, 111
- IV. Substance yellow or yellowish rather than dark-colored and often bleached by potassium hydrate solution.  
 1. At least small pieces separable when moistened. . . . . 91-97  
 2. Closely adnate, not separable. . . . . 98-100
- V. Substance more or less dark-colored, the dark color retained in preparations stained with eosin. Gloeocystidia sometimes present.  
 1. Fructification stratosed. . . . . 101-102  
 2. Fructification not stratosed.  
   \*At least small pieces separable when moistened. Compare also resupinate *Stereum ferreum*. . . . . 103-110  
   \*\*Closely adnate, not separable. . . . . 111-120  
     (Including as 117-120 the *P. cinerea* group with opaque zone next to substratum and the largest cystidia on this zone.)

1. *Peniophora gigantea* (Fr.) Masee, Linn. Soc. Bot. Jour. 25: 142. Je. 1889; Karsten, Finska Vet.-Soc. Bidrag Natur och Folk 48: 422. 1889; Bresadola, I. R. Accad. Agiati Atti III. 3: 113. 1897; Bourdot & Galzin, Soc. Myc. Fr. Bul. 28: 401. 1913; Rea, Brit. Basid. 693. 1922.

*Thelephora gigantea* Fries, Obs. Myc. 1: 152. 1815; Syst. Myc. 1: 448. 1821.—*Corticium giganteum* Fries, Epicr. 559. 1838; Hym. Eur. 648. 1874; Peck, N. Y. State Mus. Rept. 28: 52. 1876; Sacc. Syll. Fung. 6: 610. 1888.

Illustrations: Fries, *Icones Hym.* 2: *pl.* 197, *f.* 3.

Fructifications broadly effused, hyaline, white, waxy, swelling when moist and separable from substratum, when dry horn-like and parchment-like, the hymenium even, pale pinkish buff, pale olive-buff, or pallid mouse-gray in the herbarium, the margin white, fibrillose, radiating, sometimes becoming free and curling away from the substratum in drying; in section 100–500  $\mu$  thick, not colored, with the broad layer towards the substratum composed of crowded and more or less longitudinally arranged hyphae so highly gelatinously modified that only the lumen and cell contents usually show distinctly in preparations, about 3–5  $\mu$  in diameter; cystidia incrusted, about 40–50  $\times$  8–12  $\mu$ , confined to the hymenium or a zone up to 100  $\mu$  broad; spores hyaline, even, about  $4\frac{1}{2}$ –5  $\times$   $2\frac{1}{2}$ –3  $\mu$  as found in preparations.

Fructifications 3–30 cm. in diameter.

On bark and wood of dead conifers such as *Pinus*, *Abies*, and *Tsuga*. In Europe, Canada to Texas, westward to the Pacific states, in Mexico, and in Japan. June to January. Widely distributed and abundant locally.

*P. gigantea* may usually be recognized at sight by its occurrence on coniferous bark in large, whitish or pinkish buff fructifications of cartilaginous structure, separable from the substratum and more or less curling away from it in drying.

Specimens examined:

Exsiccati: Bartholomew, *Fungi Col.*, 2422, 4242, 4622; Ellis, *N.*

*Am. Fungi*, 410; Krieger, *Fungi Sax.*, 117; Ravenel, *Fungi Am.*, 452; *Fungi Car.* 2: 38; Romell, *Fungi Scand.*, 34; Sydow, *Myc. Germ.*, 553; de Thümen, *Myc. Univ.*, 909.

Finland: Mustiala, *P. A. Karsten*, in *Myc. Univ.*, 909.

Sweden: *L. Romell*, 97, 98, 349, and in *Romell, Fung. Scand.*, 34.

Germany: Brandenburg, *H. Sydow*, in *Sydow, Myc. Germ.*, 553; Königstein, *W. Krieger*, in *Krieger, Fungi Sax.*, 117.

Austria: Karwendel, Tirol, *V. Litschauer*; Stubai, Tirol, *V. Litschauer*.

Italy: Trient, *G. Bresadola*.

France: *Fautrey*, comm. by Lloyd Herb., 4354; Jura, *N. Patouillard* (in *N. Y. State Mus. Herb.*, and *Mo. Bot. Gard. Herb.*, 55907).

- Canada: Montreal, on timbers in a mill, *R. J. Blair*, 337, comm. by L. O. Overholts, 4113 (in Mo. Bot. Gard. Herb., 55632); Belleville, Ontario, *J. Macoun*, 253; Ottawa, *J. Macoun*, 48.
- New Hampshire: Chocorua, *W. G. Farlow*, 32.
- Massachusetts: Fall River, on floor beams in a mill, *W. H. Snell* (in Mo. Bot. Gard. Herb., 57379).
- New York: ex herb. Torrey, 112 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61437); Beaver River, Adirondacks, *G. F. Atkinson*, 4606; Mechanicville, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55575).
- New Jersey: Newfield, *J. B. Ellis*, in Ellis, N. Am. Fungi, 410.
- Pennsylvania: Adelaide, on cross ties, *H. v. Schrenk* (in Mo. Bot. Gard. Herb., 6685); State College, *L. O. Overholts*, 4810 (in Mo. Bot. Gard. Herb., 56124).
- Maryland: Takoma Park, *C. L. Shear*, 1266, and in Bartholomew, Fungi Col., 2422.
- Virginia: Rio, *F. Gravatt* (in Mo. Bot. Gard. Herb., 44042).
- North Carolina: Biltmore, *E. Bartholomew*, 5658 (in Mo. Bot. Gard. Herb., 44216), and in Bartholomew, Fungi Col., 4622; Chapel Hill, *J. N. Couch*, comm. by Univ. N. C. Herb., 4306 (in Mo. Bot. Gard. Herb., 57422).
- South Carolina: *H. W. Ravenel*, in Ravenel, Fungi Car. 2: 38; Aiken, *H. W. Ravenel*, in Ravenel, Fungi Am., 452.
- Georgia: Brunswick, *H. v. Schrenk* (in Mo. Bot. Gard. Herb., 43887).
- Florida: *W. W. Calkins*, 63 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61446).
- Louisiana: Shreveport, *E. Bartholomew*, in Bartholomew, Fungi Col., 4242, and (in Mo. Bot. Gard. Herb., 4943).
- Texas: Houston, *H. W. Ravenel*, 221; Quitman, *W. H. Long*, 12074, and comm. by C. J. Humphrey, 2552 (in Mo. Bot. Gard. Herb., 55046 and 9804 respectively); Somerville, *H. v. Schrenk* (in Mo. Bot. Gard. Herb., 42884).
- Michigan: Bay City, *J. R. Weir*, 301 (in Mo. Bot. Gard. Herb., 20143).
- Wisconsin: Madison, on log of *Pinus Taeda* in timber yard, *M. C. Jensen*, comm. by C. J. Humphrey, 719 (in Mo. Bot. Gard. Herb., 42729).

- Minnesota: Cass Lake, *J. R. Weir*, 394 (in Mo. Bot. Gard. Herb., 13981); St. Louis River, *J. C. Arthur*, *L. H. Bailey* & *E. W. D. Holway*, 175 St. (in Mo. Bot. Gard. Herb., 4821).
- Arkansas: Texarkana, on cross ties, *H. v. Schrenk* (in Mo. Bot. Gard. Herb., 56378).
- Colorado: Tolland, *L. O. Overholts*, 1834 (in Mo. Bot. Gard. Herb., 54879).
- Montana: Libby, *E. E. Hubert*, comm. by *J. R. Weir*, 11449 (in Mo. Bot. Gard. Herb., 63276); Rockhill, *E. E. Hubert*, comm. by *J. R. Weir*, 11966, 11979, 11984 (in Mo. Bot. Gard. Herb., 63336-8).
- Idaho: Coolin, *J. R. Weir*, 11097, comm. by U. S. Dept. Agr., Path. Myc. Coll., 1335 (in Mo. Bot. Gard. Herb., 62988); Priest River, *J. R. Weir*, 80 (in Burt Herb.) and 5825, 6331, 11985, 12018, 14938 (in Mo. Bot. Gard. Herb., 58289, 55950, 63350, 63374, and 56800 respectively); Santa, *E. E. Hubert*, comm. by *J. R. Weir*, 11603 (in Mo. Bot. Gard. Herb., 63304).
- British Columbia: Hastings, *J. Macoun*, 24.
- New Mexico: Gila National Forest, *G. G. Hedgcock* & *W. H. Long*, comm. by *C. J. Humphrey*, 2524 (in Mo. Bot. Gard. Herb., 21669).
- Mexico: Orizaba, Nuevo, *W. A. & E. L. Merrill*, 767, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54649).
- Japan: Sendai, *A. Yasuda*, 76 (in Mo. Bot. Gard. Herb., 56315).

2. *P. globifera* Ellis & Everhart, Am. Nat. 1897: 340. 1897; Sacc. Syll. Fung. 14: 224. 1899.

Type: in N. Y. Bot. Gard. Herb. and a fragment in Burt Herb.

Fructifications broadly effused, separable when moistened, when dry horn-like, whitish to pale smoke-gray, the hymenium with somewhat convex granules, bristling with the crowded cystidia; in section 400-500  $\mu$  thick, not colored, with a layer about 200-300  $\mu$  thick towards the substratum composed wholly of densely interwoven, hyaline hyphae 3-5  $\mu$  in diameter, with the walls so gelatinously modified as to be very indistinct; no gloeocystidia; cystidia heavily and coarsely incrusted, 30-70  $\times$  12-15  $\mu$ , very abundant both in the hymenium and im-

mersed throughout an outer zone up to 150  $\mu$  thick; basidiospores hyaline, even,  $4-6 \times 2-2\frac{1}{2}$   $\mu$ .

Fructifications up to 10 cm. in diameter.

On bark of conifers. New York and Ontario, and in Montana, Idaho, British Columbia, Oregon, and New Mexico. August to October. Rare.

*P. globifera* is either known only from the type collection or else it is an extreme form of *P. gigantea*, for each of the more recent gatherings cited below has some character approaching *P. gigantea*. The distinctive features of the type of *P. globifera* are whiter color, much more numerous and larger cystidia which are also more coarsely incrustated, and a hymenial surface with some convex granules like those of *Grandinia granulosa*. The original description is erroneous in stating that the fructifications are closely adnate and that the spores are globose and 3  $\mu$  in diameter.

Specimens examined:

Ontario: Ottawa, McKay's Lake, *J. Macoun*, 175, type (in N. Y. Bot. Gard. Herb.) and a specimen from the type collection, comm. by J. Macoun; Harraby, *E. T. & S. A. Harper*, 680; St. Lawrence Valley, *J. Macoun*, 85.

New York: Mt. McIntyre, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55777).

Montana: Rockhill, *E. E. Hubert*, comm. by J. R. Weir, 11960 (in Mo. Bot. Gard. Herb., 63317).

Idaho: Coolin, *J. R. Weir*, 11158M, 11491 (in Mo. Bot. Gard. Herb., 63254, 63279); Priest River, *J. R. Weir*, 20.

British Columbia: Kootenai Mts. near Salmo, *J. R. Weir*, 517, 525 (in Mo. Bot. Gard. Herb., 5068, 19430).

Oregon: Portland, *C. J. Humphrey*, 6126.

New Mexico: Cloudcroft, *W. H. Long*, 19524 (in Mo. Bot. Gard. Herb., 44765).

### 3. *P. arachnoidea* Burt, n. sp.

Type: in N. Y. Bot. Gard. Herb. and Burt Herb.

Fructifications effused, very thin, fragile, small pieces separable, white, becoming cartridge-buff in the herbarium, the hymenium continuous, not shining, fragile, loosely supported on an arachnoid subiculum, the margin delicately fibrillose or arach-

See *P. tomentella* B

noid; in section 150–300  $\mu$  thick, not colored, 2-layered, with the layer next to the substratum composed of very loosely arranged, nodose-septate, hyaline hyphae 3–4  $\mu$  in diameter and with the hymenial layer about 50  $\mu$  thick, compact; no gloeocystidia; cystidia numerous, tapering, rough or granule-incrusted near the tips, 4–6  $\mu$  in diameter, protruding up to 40  $\mu$  beyond the basidia; spores hyaline, even,  $3-4 \times 2-2\frac{1}{2}$   $\mu$ , copious.

Fructifications 1–4 cm. in diameter.

On bark of fallen limbs of *Populus* and *Alnus*. New Hampshire, New York, Alabama, and Oregon. October and November. Rare.

*P. arachnoidea* has the aspect of *Corticium arachnoideum* but is a *Peniophora*. The hyphae and their arrangement are like those of *P. crenea*. The microscopic characters are so similar to those of *Coniophora byssoidea* that the gatherings from northern localities may possibly be white forms of the latter which I have erroneously included under *P. arachnoidea*.

Specimens examined:

New Hampshire: Hanover, on *Populus*, G. R. Lyman, 27 (in N. Y. Bot. Gard. Herb., Mo. Bot. Gard. Herb., 61589, and Burt Herb.).

New York: Ithaca, G. F. Atkinson, 2589, formerly referred by me to *C. byssoidea*; Karner, on *Populus*, H. D. House (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 54376).

Alabama: Auburn, on *Alnus*, F. S. Earle, 97, type, comm. by N. Y. Bot. Gard. Herb.; Montgomery County, R. P. Burke, 367 (in Mo. Bot. Gard. Herb., 57234).

British Columbia: Salmo, J. R. Weir, 472, 480 (in Mo. Bot. Gard. Herb., 63357, 63387).

Oregon: White Pine, on hymenium of *Thelephora terrestris*, J. R. Weir, 620 (in Mo. Bot. Gard. Herb., 13999).

4. *P. inconspicua* (B. & C.) Masee, Linn. Soc. Bot. Jour. 25: 149. pl. 47, f. 14. 1889; Sacc. Syll. Fung. 21: 410. 1912.

*Corticium inconspicuum* Berkeley & Curtis, Linn. Soc. Bot. Jour. 10: 336. 1868; Sacc. Syll. Fung. 6: 615. 1888.

Type: in Kew Herb. and Curtis Herb.

Fructifications effused, thin, small, orbicular, gregarious, becoming confluent, membranaceous, small pieces separable, white

when fresh, becoming light buff in the herbarium, even, setulose with the cystidia, the margin composed of radiating hyphae; in section 250–300  $\mu$  thick, not colored, composed of densely interwoven, rather thick-walled and rigid, ascending hyphae 3–4  $\mu$  in diameter, not incrustated; no gloeocystidia; cystidia incrustated, fusoid, 50–60  $\times$  12–15  $\mu$ , scattered in the surface of the hymenium; spores in a crushed preparation are hyaline, even, 4  $\times$  3  $\mu$ , so few that they may not belong.

Fructifications about 2 mm. in diameter, becoming more or less confluent over areas up to 3 cm. long and 1 cm. wide.

On bark of dead frondose limbs. West Indies. December and March.

*P. inconspicua* has small clustered fructifications becoming confluent and very large cystidia scattered along the surface of the hymenium and none wholly immersed. In one portion of my sections the hyphae next to the substratum are slightly brownish and suggestive of those of a resupinate *Stereum* but I do not recall an effuso-reflexed *Stereum* of which *P. inconspicua* may be the resupinate fructification.

Specimens examined:

Cuba: Mountain of Rangel, *C. Wright*, Fungi Cubenses Wrightiani, 841, type (in Kew Herb., Curtis Herb., Mo. Bot. Gard. Herb., Burt Herb., and an unnumbered portion in N. Y. Bot. Gard. Herb.).

Porto Rico: Rio Piedras, *J. R. Johnston*, 1664, comm. by J. A. Stevenson (in Mo. Bot. Gard. Herb., 13223).

5. *P. galochroa* Bresadola, *Hedwigia* 35: 200. 1896; Sacc. Syll. Fung. 14: 224. 1899.

Type: a part in Burt Herb.

Broadly effused, membranaceous, small pieces separable, from white becoming pinkish buff, finally cracked and silky along the crevices, the margin somewhat fimbriate at first, soon similar; in section 250–400  $\mu$  thick, not colored, with hyphae rather stiff, thick-walled, 2–2½  $\mu$  in diameter, not incrustated, not nodose-septate, longitudinally arranged in a thin layer next to the substratum, densely interwoven in the broad middle region, the hymenial layer about 50  $\mu$  thick; no gloeocystidia; cystidia coarsely

incrusted, fusiform,  $25-50 \times 9-10 \mu$ , barely protruding, usually immersed in all parts of the hymenial layer; spores published by Bresadola as  $5\frac{1}{2}-6\frac{1}{2} \times 4-4\frac{1}{2} \mu$  but I find the type sterile.

Fructifications 3-6 cm. long,  $1\frac{1}{2}-2\frac{1}{2}$  cm. wide.

On bark of decaying branches and on wood. Brazil and West Indies. August to December. Rare.

In aspect *P. galochroa* is somewhat suggestive of *Corticium portentosum* but much thinner and very different in structure by the presence of cystidia which are confined to a hymenial layer not more than  $50 \mu$  thick in the specimens studied. The specimens from the West Indies, which I have referred to *P. galochroa*, have subglobose spores about  $3 \mu$  in diameter and are perhaps a distinct species if *P. galochroa* has as large spores as published by Bresadola, but I find the portion of the type communicated to me wholly sterile.

Specimens examined:

Brazil: Blumenau, A. Möller, type, from Bresadola.

Jamaica: Chester Vale, W. A. & E. L. Murrill, 331, 751, comm. by N. Y. Bot. Gard. Herb.

Porto Rico: Rio Piedras, J. A. Stevenson, 2985 (in Mo. Bot. Gard. Herb., 7799).

6. *P. odontoides* Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructifications effused, very thin, arachnoid-membranaceous, tender, small pieces separable when moistened, white, even, not shining, the margin thinning out, fibrillose; in section  $50-130 \mu$  thick, not colored, composed of thin-walled, loosely interwoven, suberect hyphae about  $4-4\frac{1}{2} \mu$  in diameter, incrusted, becoming collapsed; no gloeocystidia; cystidia of *Odontia* type, transversely septate, cylindric-obtuse,  $8 \mu$  in diameter, protruding up to  $45 \mu$ , not incrusted or with a few incrusting granules; spores hyaline, even,  $9-12 \times 4-4\frac{1}{2} \mu$ , copious.

Fructifications in fragments which are 2-3 cm. long, 5-6 mm. wide.

On decaying frondose wood. Canada. July to September.

*P. odontoides* is distinguished among our thin, white species by having large, cross-septate cystidia such as are common in

many species of *Odontia* where they are clustered together in the granules, but in the present species such cystidia are distributed along an even hymenium devoid of granules.

Specimens examined:

Canada: *J. Macoun*, 20; St. Lawrence Valley, *J. Macoun*, 14.

Manitoba: 52° 15' north latitude, Swan River, *G. R. Bisby*, 1047, type (in Mo. Bot. Gard. Herb., 59034).

7. *P. exigua* Burt, n. sp.

Type: in Mo. Bot. Gard. Herb. and N. Y. Bot. Gard. Herb.

Fructifications effused, small, circular, gregarious, thin, somewhat membranaceous, tender, small pieces separable when moistened, snow-white, even, contracting in drying and cracking into polygonal masses 1–2 mm. in diameter, with the white arachnoid subiculum visible on the sides of the fissures, the margin narrow, white, arachnoid; in section 150–180  $\mu$  thick, not colored, with some hyphae densely arranged parallel with the substratum and then ascending and loosely interwoven to the hymenial layer, about 3  $\mu$  in diameter, thin-walled, not nodose-septate, perhaps slightly incrustated in the hymenial layer; no gloeocystidia; cystidia incrustated, cylindric, 30–60  $\times$  6–7  $\mu$ , confined to the hymenial layer and usually wholly immersed, a few protruding up to 12  $\mu$  beyond the basidia; spores hyaline, even, 4–5  $\times$  2½  $\mu$ .

Fructifications 1–12 mm. in diameter—8 in an area 4  $\times$  1 cm. and probably becoming confluent.

On bark of dead, fallen limbs, about 12 mm. in diameter, of a frondose species. Mexico. December.

*P. exigua* is distinguished among our species by its clustered, small, snow-white fructifications which crack into small polygonal masses.

Specimens examined:

Mexico: near Guernavaca, altitude 4500 m., *W. A. & E. L. Murrill*, 377, type, and 378 (in Mo. Bot. Gard. Herb., 54474, 54473, respectively).

8. *P. laxa* Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructifications broadly effused, thin, waxy-membranaceous, loosely attached to the substratum by a cottony subiculum, tender, small pieces separable, becoming pale ivory-yellow in the herbarium, even, not much cracked, the margin thinning out, fibrillose, with some mycelial strands; in section 200–300  $\mu$  thick, not colored, with the thin, compact hymenium supported by a very broad layer of loosely interwoven, thin-walled, granule-incrusted hyphae  $1\frac{1}{2}$ –2  $\mu$ , rarely 3  $\mu$ , in diameter, with the hyphae more densely arranged in a middle zone of this layer; no gloeocystidia; cystidia not incrusted or with only a few incrusting granules,  $4\frac{1}{2}$ –6  $\mu$  in diameter, protruding up to about 30–50  $\mu$  beyond the basidia, often capitate and 6–9  $\mu$  in diameter at the apex; basidia up to 6  $\mu$  in diameter, with 4 sterigmata; spores hyaline, even, spherical,  $4\frac{1}{2}$ –6  $\mu$  in diameter, copious.

Fructifications 2–6 cm. long, 1–2 $\frac{1}{2}$  cm. wide.

In woods on bark with the wood underneath wholly decayed. British Columbia. December.

*P. laxa* is probably white when growing and assumed the pale ivory-yellow tint in the herbarium; the aspect is like that of *P. arachnoidea* but with globose spores. *P. sphaerospora* of Europe has similar spores but much coarser, erect hyphae and different cystidia.

Specimens examined:

British Columbia: Sidney, *J. Macoun*, 8, type (in Mo. Bot. Gard. Herb., 5767).

9. *P. humifaciens* Burt, n. sp.

Type: in Burt Herb.

Fructifications effused, circular, thin, membranaceous, loosely attached by white rhizomorphic strands from the substratum, easily separable, white, becoming somewhat pale pinkish buff in the herbarium, the margin thinning out, floccose; in section 150  $\mu$  thick, not colored, with hyphae hyaline, up to 5  $\mu$  in diameter and coarsest next to the substratum, very loosely arranged, branching and becoming 3  $\mu$  in diameter towards the hymenial layer, nodose-septate, with few incrusting granules; no gloeocystidia, hymenial layer 30–40  $\mu$  thick, continuous; cystidia not incrusted, 3–3 $\frac{1}{2}$   $\mu$  in diameter at base, protruding 25–40  $\mu$ ,

tapering, attenuated to a long and very sharp point; basidia with 4 sterigmata; spores hyaline, even, subglobose, about  $2\frac{1}{2} \times 2 \mu$ , copious.

Fructifications 2–2½ cm. in diameter.

On very rotten coniferous log—perhaps *Thuja*. Washington. October. Rare.

*P. humifaciens* was so sparingly and loosely connected with the substratum by the white, mycelial strands that the impact of a hatchet against the log caused fructifications to fall away. *P. arachnoidea*, a related species, has quite different hyphae and cystidia and mode of attachment.

Specimens examined:

Washington: Chehalis, C. J. Humphrey, 6266, type.

10. *P. candida* (Pers.) Lyman, Boston Soc. Nat. Hist. Proc. 33: 167. pl. 20, f. 44–55, pl. 26, f. 138. F. 1907.

*Aegerita candida* Persoon, Roemer Neues Mag. Bot. 1: 120. 1794 (imperfect stage); Syn. Fung. 684. 1801; Fries, Syst. Myc. 3: 220. 1829; Sacc. Syll. Fung. 4: 661. 1886.—*Sclerotium Aegerita* Hoffmann, Fl. Germ. 2: pl. 9, f. 1. 1795.—*Peniophora Aegerita* (Hoffm.) v. Höhnelt & Litschauer, K. Akad. Wiss. Wien Sitzungsber. 116: 814. 1907; 123: 83. 1914; Sacc. Syll. Fung. 21: 410. 1912; Bourdot & Galzin, Soc. Myc. Fr. Bul. 28: 382. 1913; Rea, Brit. Basid. 687. 1922.—*Kneiffia farinosa* Bresadola, Ann. Myc. 1: 105. 1903; Sacc. Syll. Fung. 17: 178. 1905.

Illustrations: See Sacc. Syll. Fung. 19: 25, for numerous figures of imperfect stage.

Fructifications effused, thin, adnate, very tender, at first farinose, then forming a continuous hymenium, white to pale cream-color, very minutely velvety under a lens, the margin thinning out, indeterminate, usually with clusters of the minute, globose, white, imperfect stage adjoining; in section 40–100  $\mu$  thick, not colored, with hyphae suberect, thin-walled, collapsing, of irregular outline, about 4  $\mu$  in diameter; no gloeocystidia; cystidia incrusted, scattered, starting from the substratum, 40–100  $\times$  6–12  $\mu$ ; spores hyaline, even, subglobose, 6–7  $\times$  4½–6  $\mu$ .

Fructifications 2–4 cm. long, 1–2 cm. wide.

On decaying wood and fallen branches of *Alnus*, *Populus*, *Acer*,

*Ulmus*, etc., and on the ground. In Europe, and from Massachusetts to Missouri. October and November. Rare.

The association of the effused, white fructifications of *P. candida*, with the clustered, small, globose, white or cream-colored fructifications—about 5 or 6 to a mm.—of the imperfect stage, *Aegerita candida*, affords an easy means of recognizing *P. candida*.

Specimens examined:

Poland: *Eichler*, part of the type of *Kneiffia farinosa*, comm. by Bresadola.

France: Allier, *H. Bourdot*, 19908.

New Hampshire: Hanover, *G. R. Lyman*.

Massachusetts: Arlington, *A. P. D. Piguet*, comm. by W. G. Farlow, 33; Waverly, *G. R. Lyman*, two gatherings.

New York: Ithaca Flats, *G. F. Atkinson*.

Missouri: Creve Coeur, *E. A. Burt* (in Mo. Bot. Gard. Herb., 56059), and *F. P. McWhorter* (in Mo. Bot. Gard. Herb., 57309).

11. *P. cana* Burt, n. sp.

Type: in Mo. Bot. Gard. Herb. and N. Y. Bot. Gard. Herb.

Fructifications effused, closely adnate, very thin, hypochnoid, not forming an interwoven membrane, pilose under a lens, the margin pruinose, indeterminate; in section 10–30  $\mu$  thick, not colored, consisting of short, erect, simple or once- or twice-branched hyphae 3–3½  $\mu$  in diameter, not incrusted, not nodose-septate, and of large cystidia; no gloeocystidia; cystidia heavily incrusted, conical, 50–60  $\times$  10–18  $\mu$ , protruding 30–45  $\mu$ , starting from the substratum, very numerous; spores hyaline, even, 3–3½  $\times$  1½  $\mu$  as seen on basidia.

Fructifications fragmentary, with the fragments 1½–2 cm. long, 10–15 mm. wide.

On dark, brittle wood humus—probably of a frondose species. Florida. March.

*P. cana* is so thin and hoary that it is likely to be regarded as a Hyphomycete unless examined with the microscope. The large, conical, incrusted cystidia and small spores distinguish it from *P. albugo*.

Specimens examined:

Florida: Cutler Hummock, *W. A. Murrill*, 82, type, and 83,

comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 62102, 62103).

**12. *P. irregularis* Burt, n. sp.**

Type: in Mo. Bot. Gard. Herb.

Fructifications effused, very thin, adnate, flocculent, tender, white, interrupted, somewhat lacunose, not shining, the margin thinning out, with hyphae interwoven; in section 45–75  $\mu$  thick, not colored, composed of interwoven, hyaline, incrustated hyphae  $2\frac{1}{2}$   $\mu$  in diameter; no gloecystidia; cystidia incrustated with coarse granules,  $15\text{--}22 \times 8\text{--}12$   $\mu$ , barely protruding, confined to the hymenium; spores hyaline, even,  $4\frac{1}{2} \times 2\frac{1}{2}$   $\mu$ , borne 4 to a basidium.

Fructification  $3\frac{1}{2}$  cm. long and broken off at one end, 1 cm. wide.

On bark of a rotten frondose limb about 7 mm. in diameter. Cuba. December.

*P. irregularis* is a thin, white species of flocculent texture rather than waxy, with the dark substratum visible in small spaces not covered by the fructification.

Specimens examined:

Cuba: near Havana, C. J. Humphrey, 2953, type (in Mo. Bot. Gard. Herb., 9010).

**13. *P. albofarcta* Burt, n. sp.**

Type: in N. Y. Bot. Gard. Herb., Mo. Bot. Gard. Herb., and Burt Herb.

Fructifications effused, adnate, dry, spongy-membranaceous, light buff to pinkish buff in the herbarium, minutely velutinous under a lens, even, but little cracked, the margin thinning out, minutely tomentose; in structure 200–350  $\mu$  thick, not colored, composed of a broad layer of loosely interwoven, rather rigid hyphae  $3\text{--}3\frac{1}{2}$   $\mu$  in diameter, not incrustated, not nodose-septate, and of a dense hymenial layer about 100  $\mu$  thick; no gloecystidia; cystidia incrustated, slender-fusiform,  $50\text{--}90 \times 6\text{--}9$   $\mu$ , protruding up to 30  $\mu$ , numerous in all parts of the hymenial layer; spores hyaline, even, spherical, 3–4  $\mu$  in diameter, only few found but seem to belong.

Fructifications in fragments 5 mm.—2 cm. long, 5–10 mm. wide.

On very rotten wood of stump of orange tree (*Citrus*). Louisiana. December.

The fructifications of *P. albofarcta* are scarcely distinguishable in color from the rotten wood upon which grown. The occurrence on *Citrus* wood, velvety hymenium, globose spores, and thick and loosely interwoven subiculum seem good, distinctive characters.

Specimens examined:

Louisiana: Point à la Hache, A. B. Langlois, 894, type (in N. Y. Bot. Gard. Herb., Mo. Bot. Gard. Herb., 63729, and Burt Herb.).

14. *P. longispora* (Pat.) v. Höhnelt, Ann. Myc. 3: 325. 1905; Bourdot & Galzin, Soc. Myc. Fr. Bul. 28: 392. 1913; Rea, Brit. Basid. 690. 1922.

*Hypochnus longisporus* Patouillard, Jour. de Bot. 1894: 221. 1894; Sacc. Syll. Fung. 11: 130. 1895.—*Kneiffia longispora* (Pat.) Bresadola, Ann. Myc. 1: 105. 1903.

Fructifications widely effused, thin, pubescent, hypochnoid, not separable, white, becoming pale smoke-gray to pale olive-buff in the herbarium, the margin thinning out; in structure 30–120  $\mu$  thick, not colored, composed of suberect, loosely arranged, thin-walled, rough-walled, nodose-septate hyphae  $2\frac{1}{2}$ –3  $\mu$  in diameter, and of cystidia; no gloeocystidia; cystidia acicular, rough-walled, 40–80  $\times$  3–4  $\mu$ , protruding up to 60  $\mu$ ; spores white in spore collection, even, 6–15  $\times$   $2\frac{1}{2}$ –3  $\mu$ .

Fructifications 3–10 cm. long, 1–5 cm. wide.

On bark and decaying wood of frondose species usually—especially *Populus*—rarely on conifers. In Europe and Africa and from Maine to Louisiana, Montana to Washington, and in the West Indies. July to March. Frequent.

*P. longispora* is well marked by its thin, white fructifications, hyphae, and needle-shaped cystidia rough or somewhat barbed with minute crystals, and the slender spores. There are few resupinate species which may be more confidently recognized.

Specimens examined:

Sweden: Lappland, L. Romell, 316; Stockholm, L. Romell, 411.  
Poland: Russian Poland, Eichler, comm. by G. Bresadola.

Austria: Innsbruck, Tirol, *V. Litschauer*.

France: Allier, *H. Bourdot*, 4073, 20807; Aveyron, *A. Galzin*, 11842, 17636, comm. by *H. Bourdot*, 20861, 20862.

England: Doncaster, *E. M. Wakefield* (in *Mo. Bot. Gard. Herb.*, 57118).

Maine: Kittery Point, *R. Thaxter* & *E. A. Burt*.

New York: East Berne, *C. H. Peck* (in *N. Y. State Mus. Herb.*, and *Mo. Bot. Gard. Herb.*, 14859).

Florida: Royal Palm Hummock, *W. A. Murrill*, 105, comm. by *N. Y. Bot. Gard. Herb.* (in *Mo. Bot. Gard. Herb.*, 62105).

Louisiana: Baton Rouge, *C. J. Humphrey*, 2529 (in *Mo. Bot. Gard. Herb.*, 20690); St. Martinville, *A. B. Langlois*, *br, dk*.

Montana: Columbia Falls, *C. J. Humphrey*, 7239 (in *Mo. Bot. Gard. Herb.*, 12526).

Idaho: Coolin, *J. R. Weir*, 11255, 11541 (in *Mo. Bot. Gard. Herb.*, 63259, 63296).

Washington: Olympia, *C. J. Humphrey*, 6339.

Cuba: *C. G. Lloyd*, 436 (in *Mo. Bot. Gard. Herb.*, 55169).

Jamaica: Blue Hole, *W. A. Murrill*, 231, comm. by *N. Y. Bot. Gard. Herb.*

Grenada: Grand Etang, *R. Thaxter*, comm. by *W. G. Farlow*, 5.

**15. *P. asperipilata* Burt, n. sp.**

Type: in Burt Herb. and U. S. Dept. Agr. Herb.

Fructifications effused, very thin, closely adnate, snow-white, velvety, the margin thinning out; in section 45–60  $\mu$  thick, not colored, composed of somewhat erect, loosely interwoven, thin-walled hyphae 3  $\mu$  in diameter, not incrustated, occasionally nodose-septate, which terminate in cystidia and clusters of basidia forming a hymenium barely continuous; no gloeocystidia; cystidia hair-like, slender, tapering to a sharp point, conspicuously denticulate or rough, 30–60  $\times$  3–5  $\mu$ , protruding up to 50  $\mu$  beyond the basidia, very numerous; basidia 4-spored; spores hyaline, even, subglobose, 3½–4  $\mu$  in diameter.

Fructifications 1–2½ cm. in diameter in the fragmentary specimens known to me.

On rough bark of a frondose species. Louisiana and Texas. April and May. Rare.

*P. asperipilata* is a delicate, white, hypochnoid species covering very rough decaying bark. It is noteworthy by the abundant, needle-shaped, thin-walled cystidia with denticulate sides and by the globose spores.

Specimens examined:

Louisiana: St. Martinville, *A. B. Langlois*, 44, comm. by Lloyd Herb., 2395, and 1225, comm. by W. G. Farlow (in Mo. Bot. Gard. Herb., 44067).

Texas: Houston, *H. W. Ravenel*, 265, type (in U. S. Dept. Agr. Herb. and Burt Herb.).

16. *P. albugo* Burt, n. sp.

Type: in Burt Herb.

Fructifications longitudinally effused, filmy-pruinose, adnate, whitish, pale smoke-gray in the herbarium, even, the margin indeterminate, pruinose; in section 25–50  $\mu$  thick, not colored, with the basidia and cystidia starting directly from the substratum or with only very short, erect, intervening hyphae  $2\frac{1}{2}$ –3  $\mu$  in diameter, thin-walled, collapsing; no gloecystidia; cystidia not incrusting,  $40$ – $50 \times 4\frac{1}{2}$ –6  $\mu$ , protruding up to 40  $\mu$ ; spores white in spore collections, even,  $5$ – $8 \times 3$ – $4\frac{1}{2}$   $\mu$ , borne 4 to a basidium.

Fructifications 5–8 cm. long,  $1\frac{1}{2}$ –3 cm. wide.

Under side of decaying frondose wood. Louisiana. December and April.

*P. albugo* is a whitish, pruinose, filmy growth resembling in aspect the young sterile mycelia which are sent in for determination in nearly all extensive series of specimens, but in this instance Mr. Langlois took spore falls on glass from the specimens—a highly commendable method of saving time, which is wasted when sectional preparations are made of mere mycelia, and also of keeping rubbish from preservation in the herbarium. *P. albugo* is related to *P. detritica* of France but has less membranaceous fructifications and more elongated spores.

Specimens examined:

Louisiana: St. Martinville, *A. B. Langlois*, *ba*, type, and *dl*.

17. *P. albula* Atkinson & Burt, n. sp.

Type: in Burt Herb.

Fructifications long-effused, adnate, thin, tender, small pieces separable, white, becoming light buff when old and in the herbarium, somewhat granular, becoming cracked into polygonal masses 1–2 mm. in diameter, the margin thinning out; in section 70–200  $\mu$  thick, not colored, composed of suberect, thin-walled, branching hyphae about 3  $\mu$  in diameter, occasionally nodose-septate, not incrustated, sometimes slightly brownish near the substratum; no gloeocystidia; cystidia not incrustated, 3  $\mu$  in diameter, tapering towards the apex, protruding 10–20  $\mu$ , sometimes very few and inconspicuous; spores hyaline, even,  $4-6 \times 2\frac{1}{2}-3 \mu$ .

Fructifications 2–20 cm. long, 1–2 cm. wide.

On bark of fallen decaying branches on the ground, of *Alnus*, *Acer*, *Tilia*, *Populus*, and other frondose species. Canada to Alabama and westward to Washington. July to February. Frequent.

*P. albula* belongs near *P. Sambuci* on account of its white color, somewhat granular hymenium, and minute cystidia which are not incrustated and sometimes so few and inconspicuous that they may possibly be overlooked, and the specimen referred to *Corticium*. *P. albula* differs from *P. Sambuci* in not having the hyphae incrustated in a subhymenial zone and in having them sometimes slightly brownish towards the substratum.

Specimens examined:

- × Exsiccati: Ellis, N. Am. Fungi, 409, under the name *Corticium calceum*.

Canada: *J. Macoun*, 5, type; Beechwood Cemetery, other locality not given, *J. Macoun*, 58; Ottawa, *J. Macoun*, 9.

Maine: Kittery Point, *R. Thaxter* & *E. A. Burt*.

New Hampshire: Chocorua, *W. G. Farlow*, D (in Mo. Bot. Gard. Herb., 56132).

Massachusetts: Sharon, *A. P. D. Piguet*, 137, comm. by Farlow Herb. (in Mo. Bot. Gard. Herb., 59628); Wayland, *A. B. Seymour*, T 8 (in Mo. Bot. Gard. Herb., 19550).

New York: Albany, *H. D. House*, 3 gatherings (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 57447, 59683, 59686); Ithaca, several collections by *G. F. Atkinson*, *H. L. Jackson*, *C. O. Smith*, and *Van Hook*, comm. by G. F. Atkinson, 8028,

- 8069, 8072, 8235, 14392, 14393; Karner, *H. D. House* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 54373); New York, Bronx Park, *L. M. Underwood* (in N. Y. Bot. Gard. Herb., Mo. Bot. Gard. Herb., 61592, and Burt Herb.).
- New Jersey: Newfield, *J. B. Ellis*, *J* 87, *D* 81, comm. by Farlow Herb. (in Mo. Bot. Gard. Herb., 8266, 14689, 7458), and in Ellis, *N. Am. Fungi*, 409.
- Pennsylvania: Philadelphia, *A. S. Rhoads*, comm. by L. O. Overholts, 2679 (in Mo. Bot. Gard. Herb., 5919).
- Maryland: Takoma Park, *C. L. Shear*, 1271, 1272.
- District of Columbia: Chive Chose, *J. R. Weir*, 372 (in Mo. Bot. Gard. Herb., 17649).
- Virginia: Chain Bridge, *A. S. Rhoades*, comm. by L. O. Overholts, 3969 (in Mo. Bot. Gard. Herb., 54986).
- Florida: *W. W. Calkins*, comm. by U. S. Dept. Agr. Herb.
- Alabama: Montgomery, *R. P. Burke*, 127, 157 (in Mo. Bot. Gard. Herb., 5499, 44964).
- Iowa: Woodbine, *C. J. Humphrey & C. W. Edgerton*, comm. by C. J. Humphrey, 6511, 6546 (in Mo. Bot. Gard. Herb., 11063, 11276).
- Washington: Bingen, *W. N. Suksdorf*, 894, 900.

**18. *P. Sambuci* (Pers.) Burt, n. comb.**

*Corticium Sambuci* Persoon, Roemer Neues Mag. Bot. 1: 111. 1794; Fries, *Epier.* 565. 1838; Hym. Eur. 660. 1874; Berkeley, *Outlines Brit. Fung.* 276. 1860; Massee, *Linn. Soc. Bot. Jour.* 27: 137. 1890; Wakefield, *Brit. Myc. Soc. Trans.* 4: 115. *pl.* 3, *f.* 1, 2. 1913; Rea, *Brit. Basid.* 677. 1922.—*Thelephora Sambuci* Persoon, *Syn. Fung.* 581. 1801; Myc. Eur. 1: 152. 1822 (in subgenus *Corticium*).—*Hypochnus Sambuci* (Pers.) Sacc. *Syll. Fung.* 6: 656. 1888.—*Thelephora sera* Persoon, *Syn. Fung.* 580. 1801; Myc. Eur. 1: 151. 1822 (in subgenus *Corticium*).—*Corticium serum* (Pers.) Bresadola, *I. R. Accad. Agiati Atti III.* 3: 112. 1897; Bourdot & Galzin, *Soc. Myc. Fr. Bul.* 27: 246. 1911.

Fructifications effused, closely adnate, incrusting, not separable, snow-white or chalk-white, sometimes becoming pale cream-color in the herbarium, granular and pruinose, the margin thinning out; in section 100–250  $\mu$  thick, not colored, composed

of suberect, somewhat interwoven, thin-walled, incrusting hyphae  $2\frac{1}{2}$ –3  $\mu$  thick, occasionally nodose-septate; no gloeocystidia; cystidia not incrusting, tapering towards the apex, 3  $\mu$  in diameter, protruding 10–30  $\mu$  beyond the basidia; spores hyaline, even,  $4\text{--}5\frac{1}{2} \times 3\text{--}4 \mu$ .

Fructifications 3–10 cm. long, 1–3 cm. wide, often surrounding small twigs.

On bark and wood of fallen *Sambucus* and other frondose species. In Europe and throughout North America. Throughout the year. Very common.

This species is very common, and has become so well known to mycologists early in their work, under its original name *Corticium Sambuci* that there has been a reluctance, which I feel also, to call it *Peniophora Sambuci*, which its structure really requires. Its cystidia have been termed sterile basidia and cystidioles, but they differ in no morphological respect from the cystidia of other species of *Peniophora*. The species occurs in especially fine condition on *Sambucus*, and it is well to use such specimens as standards for comparison.

Specimens examined:

Exsiccati: Bartholomew, *Fungi Col.*, 3135, 4715; Brinkmann, *Westfälische Pilze*, 10; Cavara, *Fungi Longobardiae*, 63, 213; Cooke, *Fungi Brit.*, 408; Ell. & Ev., *Fungi Col.*, 607, under the name *Corticium scutellare*; Krieger, *Fungi Sax.*, 523; Romell, *Fungi Scand.*, 35; Roumeguere, *Fungi Gallici*, 2911; Westendorp, *Herb. Crypt. Belge*, 588.

Sweden: Stockholm, *L. Romell*, 129, 200, and in Romell, *Fungi Scand.*, 35.

Germany: Saxony, *Krieger*, *Fungi Sax.*, 523; Westphalia, in Brinkmann, *Westfälische Pilze*, 10.

Austria: Tirol, Innsbruck, *V. Litschauer*.

Italy: Rome, *G. Bresadola*; Brixia, *A. Marozzi*, and Papia, *F. Cavara*, in Cavara, *Fungi Longobardiae*, 63 and 213 respectively.

England: Forden, *E. Vize*, in Cooke, *Fungi Brit.*, 408.

Belgium: Courtrai, in Westendorp, *Herb. Crypt. Belge*, 588.

France: *Fautrey*, comm. by Lloyd *Herb.*, 4326, 4357; Bois de Vincennes, *N. Patouillard* (in *N. Y. Bot. Gard. Herb.*, and

- Mo. Bot. Gard. Herb., 55906); Rouen, in Roumeguere, *Fungi Gallici*, 2911.
- Canada: *J. Macoun*, 21, 26; Lake Rosseau, *E. T. & S. A. Harper*, 754; Ottawa, *J. Macoun*, 370.
- Maine: *F. L. Harvey* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55804).
- New Hampshire: Chocorua, *W. G. Farlow*, 2, and C3 (in Mo. Bot. Gard. Herb., 43893).
- Vermont: Grand View Mountain, *E. A. Burt*; Middlebury, *E. A. Burt*, 4 gatherings; Weybridge, *E. A. Burt*.
- Massachusetts: East Wareham, *C. L. Shear*, 2903 (in Mo. Bot. Gard. Herb., 15448).
- New York: Clarksville, *C. H. Peck*, comm. by N. Y. State Mus. Herb. (in Mo. Bot. Gard. Herb., 18281); Constableville, *C. H. Peck*, comm. by N. Y. State Mus. Herb., T4 (in Mo. Bot. Gard. Herb., 54571); Ithaca, *G. F. Atkinson*, 942, 4567, 8047, 22960; Lyndonville, *C. E. Fairman*, comm. by N. Y. State Mus. Herb. (in Mo. Bot. Gard. Herb., 57512); Marcellus, *L. M. Underwood*, 62 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61595); New York, *W. A. Murrill* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61595).
- New Jersey: Newfield, *J. B. Ellis*, in *Ell. & Ev.*, *Fungi Col.*, 607.
- Pennsylvania: Trexlertown, *W. Herbst*, 11.
- Louisiana: Baton Rouge, *Edgerton & Humphrey*, comm. by C. J. Humphrey, 5662; St. Martinville, *A. B. Langlois*, dd, 37, comm. by Lloyd Herb., 2384, and 1944, comm. by W. G. Farlow (in Mo. Bot. Gard. Herb., 44065).
- Michigan: Ann Arbor, *C. H. Kauffman* (in Mo. Bot. Gard. Herb., 5584); Gogebic County, *E. A. Bessey*, 372 (in Mo. Bot. Gard. Herb., 56636).
- Missouri: Creve Coeur, *L. O. Overholts* (in Mo. Bot. Gard. Herb., 63704); St. Louis, *E. A. Burt* (in Mo. Bot. Gard. Herb., 63466, 58335).
- Kansas: Stockton, *E. Bartholomew*, 5815, 8206 (in Mo. Bot. Gard. Herb., 16709, 62175), and in Bartholomew, *Fungi Col.*, 4715; Rooks County, *E. Bartholomew*, 2045 (in Mo. Bot. Gard. Herb., 4827).
- Washington: Bainbridge Island, *E. Bartholomew*, in Bartholo-

mew, Fungi Col., 3135; Olympia, *C. J. Humphrey*, 6311; Sedro-Woolley, *C. J. Humphrey*, 7464.  
California: Claremont, *I. M. Johnston*, comm. by L. O. Overholts, 3645 (in Mo. Bot. Gard. Herb., 54699); Santa Catalina Island, *L. W. Nuttall*, 522b (in Mo. Bot. Gard. Herb., 57622).  
Mexico: Guernavaca, *W. A. & E. L. Merrill*, 391, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54548); Orizaba, *W. A. & E. L. Merrill*, 756, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54644).

19. *P. Thujae* Burt, n. sp.

Type: in Burt Herb.

Fructifications effused, thin, closely adnate, white, sometimes becoming cartridge-buff in the herbarium, the margin thinning out; in section 40–150  $\mu$  thick, not colored, with the hyphae loosely arranged, suberect, interwoven, 2–3  $\mu$  in diameter, nodose-septate, thin-walled, becoming incrustated in a subhymenial zone; no gloeocystidia; cystidia hair-like, not incrustated, 3  $\mu$  in diameter at the base, tapering upward and sometimes somewhat capitate at apex, protruding 20–30  $\mu$  beyond the basidia; spores white in a spore collection, 4–5  $\times$  3  $\mu$ .

Fructifications 2–6 cm. long, 1–2 cm. wide, on trunks of *Thuja*, more rarely on *Juniperus* and *Pinus Strobus*. Canada to Massachusetts, and westward to Missouri. July to October. Occasional.

*P. Thujae* may be recognized by its thin, white fructifications on white cedar, with microscopic structure as stated. It differs from *Peniophora Sambuci* in having thinner fructifications, not becoming granular and pruinose, cystidia numerous, and in occurrence on a coniferous substratum.

Specimens examined:

Canada: *J. Macoun* 62; St. Lawrence Valley, *J. Macoun*, 68, 80; Ottawa, *J. Macoun* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55813), and 45, and *J. M. Macoun* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 56078); Quebec, Hull, *J. Macoun*, 173.

Vermont: Middlebury, *E. A. Burt*, 3 gatherings, one of which is the type.

Massachusetts: Magnolia, *W. G. Farlow, f*; Newton, *W. G. Farlow*.

New York: Ithaca, *G. F. Atkinson, 14416*; North River, *C. H. Peck*, comm. by N. Y. State Mus. Herb., T5 (in Mo. Bot. Gard. Herb., 54569).

Missouri: St. Louis, *E. A. Burt*.

**20. *P. montana* Burt, n. sp.**

Type: in Burt Herb.

Fructifications effused, thin, adnate, tender, whitish to ivory-yellow, widely cracked in drying and showing the loose subiculum on the sides of the crevices, the margin thinning out, somewhat floccose; in section 200–225  $\mu$  thick, not colored, composed of loosely interwoven, thin-walled, hyaline hyphae 4–5  $\mu$  in diameter, not incrustated, ~~not~~ nodose-septate, of irregular outline; no gloeocystidia; cystidia hair-like, not incrustated, conical, tapering to a sharp apex, 6–9  $\mu$  in diameter at the base, protruding up to 40  $\mu$ ; spores hyaline, even, cylindric, slightly curved, 12–14  $\times$  4–5  $\mu$ .

Fragmentary fructification 4 cm. long, 1 cm. wide.

On badly decayed coniferous wood at an altitude of 10,000 ft. Colorado. July. Rare.

*P. montana* is noteworthy by having spores as large as those of *P. mutata*, but the fructifications are thinner and more tender than those of *P. mutata* and occur on coniferous wood and have no gloeocystidia.

Specimens examined:

Colorado: Ouray, *C. L. Shear, 1188*, type.

**21. *P. terricola* Burt, n. sp.**

Type: in Burt Herb.

Fructifications effused, thin, closely adnate, somewhat membranaceous, white, not waxy, the margin indeterminate, thinning out; in section 100–200  $\mu$  thick, not colored, composed of sub-erect, branching hyphae 3–6  $\mu$  in diameter, incrustated, densely interwoven and with more or less sand intermixed; no gloeocystidia; cystidia not incrustated, cylindric, 4–6  $\mu$  in diameter, protruding 20–50  $\mu$  beyond the basidia; spores hyaline, even, 4–6  $\times$  3–4  $\mu$ .

Fructifications received in fragments but probably about 1–3 cm. in diameter.

On ground in mixed woods. New York and Louisiana. April and June.

The fructifications of *P. terricola* contain so much of the sand from the earth substratum that it is difficult to secure sections or to distinguish the fructification proper from its vegetative mycelium. The occurrence in small white patches on the ground, and the characters of spores and cystidia may enable recognition of this species which is probably common.

Specimens examined:

New York: Ithaca, *G. F. Atkinson*, 22658, 22659, type.

Louisiana: St. Martinville, *A. B. Langlois*, *bq*.

**22. *P. magnahypha* Burt, n. sp.**

Type: in Mo. Bot. Gard. Herb. and Farlow Herb.

Fructifications interruptedly effused, thin, adnate, between pale drab-gray and pale vinaceous-fawn, contracting in drying into small, more or less completely separated masses, not waxy, the margin thinning out; in section 150–180  $\mu$  thick, not colored, composed of erect hyphae 9–10  $\mu$  in diameter which start from the substratum at points 30–100  $\mu$  apart, branch repeatedly into branches of smaller diameter, are sparingly granule-incrusted, and terminate in large clusters of basidia and one or a few cystidia forming a hymenium; no gloeocystidia; cystidia not incrusted, septate, 9  $\mu$  in diameter, protruding up to 60  $\mu$  beyond the basidia; basidia with 4 sterigmata; spores hyaline, even,  $9-10 \times 6 \mu$ .

Fructifications up to 4 cm. long, 2 cm. wide.

On decaying wood of a frondose species. Florida. Autumn.

While preliminary inspection of *P. magnahypha* with a lens does not promise more than any one of the great number of little-differentiated, perplexing, whitish resupinate species difficult to identify yet doing an important work in splitting up complex organic compounds, nevertheless its structural characters are unique. The combination of coarse, scattered, trunk-like, erect hyphae with the main trunk hypha or some of its principal branches protruding through and beyond the flat-topped cluster

of basidia as a transversely septate cystidium should lead to the ready recognition of this species when sectional preparations are studied.

Specimens examined:

Florida: Cocoanut Grove, *R. Thaxter*, 57, type (in Mo. Bot. Gard. Herb., 43947).

**23. *P. exilis* Burt, n. sp.**

Type: in Mo. Bot. Gard. Herb.

Fructifications longitudinally effused, very thin, closely adnate, pale olive-buff, even, somewhat velutinous, the margin thinning out, indeterminate; in section 30–60  $\mu$  thick, not colored, composed of erect, bushy-branched hyphae 3  $\mu$  in diameter, ascending from the substratum, soon terminating in basidia and cystidia, not nodose-septate, with very little, if any, incrustation; no gloecystidia; cystidia hair-like, irregular, flexuous,  $30 \times 4\frac{1}{2}$ –5  $\mu$ , protruding up to 20  $\mu$ , few and scattered; basidia simple, with 4 short sterigmata; spores hyaline, even,  $4\frac{1}{2}$ –5  $\times$   $2\frac{1}{2}$ –3  $\mu$ .

Fructifications 1–6 cm. long, about 1 cm. wide.

On bark of decaying branches of frondose species in moist virgin forest. Mexico. January.

The fructifications of *P. exilis* occur as a thin, downy, gray coating on very rotten branches 1–2 cm. in diameter. The pale olive-buff color should be helpful in separating this species from the great number more white in color.

Specimens examined:

Mexico: Guernavaca, *W. A. & E. L. Murrill*, 385, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54467); Orizaba, *W. A. & E. L. Murrill*, 757, type, and 780, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54619, 54620).

**24. *P. livida* Fries in herb. (under *Corticium*, n. sp.)**

*Peniophora serialis* in part of v. Höhnelt & Litschauer, Bourdot & Galzin, and Rea.—Not *Corticium seriale* Fries of Fries Herb.—Not *Xerocarpus Cacao* Karsten, Hedwigia 29: 271. 1890.

Type: in Herb. Fries, determined by E. Fries as *Corticium lividum*.

Fructifications longitudinally effused, closely adnate, waxy-soft, variable in color, pale olive-gray and pale olive-buff to fawn-color in the herbarium, glabrous, even, not cracked usually, rarely with a few fissures from contraction in drying, the margin thinning out; in section 75–500  $\mu$  thick, not colored, composed of densely interwoven, rather erect hyphae about 3  $\mu$  in diameter, indistinct, with the wall gelatinously modified; no gloeocystidia; cystidia not incrustated, tapering to a sharp apex,  $3\frac{1}{2}$ –6  $\mu$  in diameter, protruding up to 40  $\mu$  beyond the basidia; spores hyaline, even,  $4\text{--}5 \times 1\frac{1}{2}\text{--}2 \mu$ .

Fructifications 3–12 cm. long, 1–3 cm. wide.

Generally on old, decaying, coniferous wood, rarely on frondose wood. Europe, Louisiana, and British Columbia. Throughout the year.

*P. livida* may be best recognized by its close resemblance in aspect to even specimens of common *Corticium lividum* Pers., from which the presence of cystidia separate it. *P. livida* is one of the 3 species which European mycologists, following Bresadola, have been inclined to regard as sufficiently meeting the original description of *Corticium seriale* that one could ignore the fact that the species concerned do not agree in structure with one another, nor with any of the specimens in Kew Herbarium or Fries Herbarium, determined by Elias Fries as *Corticium seriale*. With regard to the applicability of the original description of *Corticium seriale*, it emphasizes rimose and testaceous fructifications which are not characters of *P. livida*. It might solve the problem of *Corticium seriale* Fr. to search in Sweden for a true *Corticium* which is testaceous and rimose and could be compared with the specimen in Kew Herbarium determined by Fries—something more like *Corticium Cacao* Karst, which has the hymenium somewhat deteriorated in my specimen so that I cannot be quite positive as to its genus from this specimen alone but seems to me to be a true *Corticium*.

Specimens examined:

Sweden: *E. Fries*, type, the thinner and paler of the specimens in Herb. *E. Fries*, determined by *E. Fries* as *Corticium lividum*; *L. Romell*, 108, 109; *Femsjö*, *L. Romell*, 410; Stockholm, *L. Romell*, 198, 326, 345, 362.

Austria: Tirol, Innsbruck, V. Litschauer, 3 specimens under the name *P. serialis*.

Louisiana: Bogalusa, C. J. Humphrey, 5547.

British Columbia: Revelstoke, C. W. Dodge, 1639 (in Mo. Bot. Gard. Herb., 58784); Sidney, J. Macoun, 9 (in Mo. Bot. Gard. Herb., 5768); Victoria, J. Macoun, 541 (in Mo. Bot. Gard. Herb., 63728).

25. *P. phyllophila* Masee, Linn. Soc. Bot. Jour. 25: 150. 1889; Sacc. Syll. Fung. 9: 238. 1891; Rea, Brit. Basid., 697. 1922.

*Asterostromella epiphylla* v. Höhnelt & Litschauer, K. Akad. Wiss. Wien Sitzungsber. 116: 773. text f. 3. 1907.

Type: type distribution in Ravenel, Fungi Am., 457, under the name *Corticium epiphyllum*.

Fructification broadly effused, thin, closely adnate, not at all separable, whitish, becoming olive-buff in the herbarium, the margin thinning out; in section 40–80  $\mu$  thick, not colored, composed of suberect, interwoven, branching, thin-walled hyphae 2  $\mu$  in diameter, not incrusted, not nodose-septate, bearing clusters of basidia and branching paraphyses; also present occasional, tapering cystidia not incrusted, 30–45  $\times$  4–10  $\mu$ , usually immersed, occasionally protruding up to 32  $\mu$  beyond the basidia; paraphyses colorless, branching at the hymenial surface into an antler-shaped form with very slender prongs; spores published by v. Höhnelt & Lits. as 10–22  $\times$  1½–3  $\mu$ .

Fructifications up to 5 cm. in diameter.

On fallen frondose leaves in South Carolina and on fallen decaying frondose limbs in Florida and Central America.

*P. phyllophila* is apparently a tropical species occurring more frequently on epidermis of small fallen twigs and ranging northward to South Carolina. I have studied specimens of the type distribution in the copies of Ravenel, Fungi Americana, of Farlow Herbarium, Missouri Botanical Garden Herbarium, United States Department of Agriculture Herbarium, and Burt Herbarium, and find these specimens to be the same in structure and all showing the distinctive antler-shaped paraphyses emphasized by v. Höhnelt & Litschauer, and also tapering, non-

incrusted cystidia which are presumably what Massee really saw. I see no reason for displacing the specific name given by Massee for the later combination proposed by v. Höhnelt & Litschauer. The basidia are so young that I found none bearing sterigmata nor spores and only twice slender spores  $12-15 \times 3 \mu$ .

Specimens examined:

Exsiccati: Ravenel, *Fungi Am.*, 457, type distribution, under the name *Corticium epiphyllum*.

South Carolina: Aiken, *H. W. Ravenel*, in Ravenel, *Fungi Am.*, 457.

Florida: *W. W. Calkins*.

Central America: Panama Chagres, *F. L. Stevens*, 1300 (in *Mo. Bot. Gard. Herb.*, 63521).

26. *P. piliseta* Burt, n. sp.

Type: in N. Y. Bot. Gard. Herb., Mo. Bot. Gard. Herb., and Burt Herb.

Fructifications longitudinally effused, thin, somewhat membranaceous, tender, small pieces separable when moistened, whitish cream-color in the herbarium, not cracked, not shining, the margin thinning out, with the hyphae interwoven; in section  $100-120 \mu$  thick, not colored, composed of ordinary, interwoven, thin-walled hyphae about  $3 \mu$  in diameter, not incrusted nor nodose-septate, and of a system of hyaline tissue about  $1 \mu$  in diameter, not taking stain, branching like the coarser tissue of *Corticium investiens* and with its delicate antler-shaped branches barely visible in the hymenial surface; no gloeocystidia; cystidia not incrusted, cylindric, obtuse,  $4\frac{1}{2}-6 \mu$  in diameter, protruding  $30-45 \mu$ , confined to the surface of the hymenium; spores hyaline, even, cylindric, biguttulate,  $9-11 \times 4-4\frac{1}{2} \mu$ , copious.

Fructification  $7\frac{1}{2}$  cm. long, broken off at one end, 10-15 mm. wide.

On a very rotten, small, frondose limb about 1 cm. in diameter. Porto Rico. June.

*P. piliseta* is noteworthy by having in addition to an ordinary hyphal system in its fructification an additional system, intermixed with the first, of delicate, branching organs not taking

stain, such as is more distinctly visible, because coarser, in *P. phyllophila*, *Hypochnus pallescens*, *Corticium investiens* and *Grandinia granulosa*, and whose peripheral branches are more or less visible in the surface of the hymenium as antler-shaped paraphyses. *P. mexicana* has coarser hyphae and more hypochnoid surface.

Specimens examined:

Porto Rico: Martin Piña, Rio Piedras, *J. R. Johnston*, 971 a, type (in N. Y. Bot. Gard. Herb., Mo. Bot. Gard. Herb., 63243, and Burt Herb.).

**27. *P. mexicana* Burt, n. sp.**

Type: in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb.

Fructifications longitudinally effused, adnate, dry, hypochnoid, thin, cream color in the herbarium, even, velutinous under a lens, not cracked, the margin thinning out; in section 140  $\mu$  thick, not colored, composed of even-walled, rather rigid, loosely arranged, branching hyphae 5–7  $\mu$  in diameter, not incrustated, not nodose-septate, which ascend obliquely from the substratum and bear a dense hymenium containing numerous cystidia and branching, filiform paraphyses (or perhaps conidiophores); no gloeocystidia; cystidia minutely incrustated or rough, tapering, 60–100  $\times$  5–9  $\mu$ , protruding 40–60  $\mu$ ; spores (perhaps conidia) hyaline, even, 6–7½  $\times$  4–5  $\mu$ , copious.

Fructifications 4 cm. long and broken off at both ends, 6 mm. wide.

In depressed places on very rotten frondose wood. Mexico. January.

The dry, cream color or buff fructifications of hypochnoid texture, very coarse hyphae, large cystidia, and branching paraphyses or conidiophores in the surface of the hymenium are characters which should make this species recognizable, although my inability to demonstrate basidia convinces me that the type is in a conidial stage somewhat comparable with that of *Corticium roseum*.

Specimens examined:

Mexico: Orizaba, Nuevo, altitude 3600 m., *W. A. & E. L. Murrill*, 773, type (in Mo. Bot. Gard. Herb., 54633).

**28. *P. ludoviciana* Burt, n. sp.**

Type: in Burt Herb., and Farlow Herb. probably.

Fructifications effused, adnate, very thin, buff-yellow, darkening to cinnamon-buff in the herbarium, hymenium subvelutinous, not waxy, not cracking, the margin thinning out, paler; in section 40–75  $\mu$  thick, not colored, composed of suberect, branching, granule-incrusted, hyaline hyphae 3–4  $\mu$  in diameter; no gloeocystidia; cystidia hyaline, not incrusted, protruding 18–25  $\mu$  beyond the basidia; spores hyaline, even,  $4-5 \times 2\frac{1}{2}-3\frac{1}{2}$   $\mu$ , somewhat flattened on one side.

Fructifications 1–2 $\frac{1}{2}$  cm. long,  $\frac{1}{2}$ –1 $\frac{1}{2}$  cm. broad, becoming confluent.

On rotting decorticated wood of frondose species. Louisiana and Michigan. August and April. Rare.

*P. ludoviciana* closely resembles in aspect *P. flammea* and, like the latter, is not separable from the substratum and gives no noteworthy color changes when the sections are treated with potassium hydrate solution. Prolonged search has failed to find any immersed cystidia. *P. sulphurina* has larger, cracked fructifications with shining hymenium and yellow subiculum.

Specimens examined:

Louisiana: St. Martinville, A. B. Langlois, 1919, type, comm. by W. G. Farlow.

Michigan: Vermilion, A. H. W. Povah, 369 (in Mo. Bot. Gard. Herb., 13921).

**29. *P. fusca* Burt, n. sp.**

Type: in Mo. Bot. Gard. Herb.

Fructifications effused, closely adnate, very thin, drying ecru-drab to drab, velvety, even, the margin not determinate, thinning out; in structure 35–45  $\mu$  thick, not colored, composed of loosely arranged, suberect, hyaline hyphae more or less incrusted,  $3\frac{1}{2}$ –4  $\mu$  in diameter under the incrustation, not nodose-septate; no gloeocystidia nor conducting organs; cystidia hair-like, not incrusted, 7–12  $\mu$  in diameter at the base, protruding 40–125  $\mu$  beyond the basidia; basidia with 4 sterigmata; spores copious, hyaline, even,  $6-7 \times 3\frac{1}{2}$   $\mu$ .

Fructifications 2–6 cm. long, 1–2 cm. wide, becoming larger by confluence.

On very rotten, decorticated and probably frondose wood. Alabama. June to October. Only 2 gatherings known.

*P. fusca* is a thin species of mucedinous aspect, like *P. longispora* but well characterized by its drab color, large cystidia, and moderately large spores. *P. cinerea* is sometimes of the same color but is less mould-like when viewed with a lens and with quite different structure and microscopic characters.

Specimens examined:

Alabama: Montgomery County, *R. P. Burke*, 508, type, and 836 (in Mo. Bot. Gard. Herb., 57301 and 63125 respectively).

**30. *P. gilvidula* Bresadola, Mycologia 17: 70. 1925.**

Type: in Weir Herb.

Fructifications broadly effused, closely adnate, waxy, pinkish buff in the herbarium, here and there somewhat cracked, pruinose, the margin thinning out; in section 150–250  $\mu$  thick, not colored, 2-layered, the layer next the substratum 75–150  $\mu$  thick, composed of densely arranged hyphae about 4–5  $\mu$  in diameter, not incrustated, which are longitudinally interwoven in the type, hymenial layer 75–100  $\mu$  thick, composed of densely arranged, erect, coarse tissue; no gloecystidia; cystidia not incrustated, 6–8  $\mu$  in diameter, protruding 30–60  $\mu$  beyond the basidia, not numerous, confined to the hymenium; basidia with 4 sterigmata; spores white in the mass, even,  $5-6 \times 2\frac{1}{2}-3\frac{1}{2} \mu$ , copious.

Fructifications 8–15 cm. long, 3–5 cm. wide.

On wood of log of *Pinus ponderosa*. Montana. September.

*P. gilvidula* has no especially distinctive character. The occurrence on *Pinus ponderosa* wood, buff color, thick hymenial layer, coarse hyphae, and small spores constitute the group of distinguishing characters. I have included under *P. gilvidula* a specimen from the same place which has the layer next to the substratum composed of erect hyphae.

Specimens examined:

Montana: Evaro, *J. R. Weir*, 23305, type (in Weir Herb.) and 426 (in Mo. Bot. Gard. Herb.).

**31. *P. zonata* Burt, n. sp.**

Type: in Mo. Bot. Gard. Herb.

Fructifications widely effused, closely adnate, thick, layered or zonate within, avellaneous, pruinose, contracting in drying and cracking into more or less connected masses about 1 mm. in diameter, the margin thinning out; in section 700  $\mu$  thick, probably stratosse but perhaps with merely a hymenium of several (4 in the type) layers or zones, not colored, composed of densely arranged hyphae about  $2\frac{1}{2}$ –3  $\mu$  in diameter, with somewhat gelatinously modified and indistinct, not sharply defined as tramal, and hymenial layers; no gloeocystidia; cystidia not incrusted, 3  $\mu$  in diameter at the base, tapering to a sharp apex, protruding up to 30  $\mu$ , very numerous in the surface of the hymenium; spores hyaline, even, curved,  $4\frac{1}{2} \times 2\frac{1}{2}$   $\mu$ , copious.

Portion of fructification 7 cm. long, 4 cm. wide, broken off at one end and on sides.

On decayed coniferous wood. Oregon. March.

The cystidia are so small and so very numerous in the hymenial surface and the season when collected—March—so early in the year that it is possible that this species is a stratosse *Corticium* just starting a new outer stratum on its fructification, but I do not recognize it as a *Corticium* at present known to me. No matter what the genus may prove to be, the thick, somewhat liver-colored fructifications of layered or stratosse structure, and notably cracked, should always make this species easy to recognize.

Specimens examined:

Oregon: Corvallis, S. M. Zeller, 2252, type (in Mo. Bot. Gard. Herb., 63030).

### 32. *P. laminata* Burt, n. sp.

Type: in Burt. Herb.

Fructifications broadly effused, thin, adnate, not separable, cream-buff to warm buff, pubescent, somewhat tubercular, at length cracking into small masses 2–3 to a mm., the margin thinning out, fibrillose; in section 75–140  $\mu$ , rarely 200  $\mu$ , thick, not colored, becoming stratosse, 1–6 strata, each composed of a supporting layer of loosely arranged, erect, hyaline hyphae  $3$ – $3\frac{1}{2}$   $\mu$  in diameter, thin-walled, collapsing, not incrusted, and of a compact hymenial layer; no gloeocystidia; cystidia not incrusted,

hair-like, cylindric, obtuse,  $3-3\frac{1}{2}\mu$  in diameter, protruding up to  $30\mu$  beyond the basidia; basidia 4-spored; spores hyaline, even,  $4\frac{1}{2} \times 3-3\frac{1}{2}\mu$ , copious.

Fructifications 2–8 cm. in diameter.

On bark and wood of fallen decaying trunk of *Pinus Strobus*. Vermont. December. Rare.

*P. laminata* is so suggestive in color and general aspect of the very common *Corticium investiens* that it is possible *P. laminata* has been passed by as a thin, young specimen of *C. investiens*, but the structure of these two species is quite different. The color of *P. laminata* does not fade in the herbarium; my gathering of nearly thirty years ago still has the color originally noted.

Specimens examined:

Vermont: Middlebury, *E. A. Burt*, type.

33. *P. guttulifera* (Karst.) Sacc. Syll. Fung. 9: 240. 1891; Bourdot & Galzin, Soc. Myc. Fr. Bul. 28: 400. 1913.

*Gloeocystidium guttuliferum* Karsten, Finska Vet. Soc. Bidrag Natur och Folk 48: 430. 1889.

Type: a portion in Burt Herb.

Fructifications broadly effused, closely adnate, thin, becoming light buff to pinkish buff and chamois-colored in the herbarium, more or less studded with minute, hard, globular masses of resinous color which are visible under a lens but dissolve and disappear in aqueous mounts, the margin indeterminate, thinning out; in section  $50-160\mu$  thick, not colored, with the hyphae erect, branching,  $3-5\mu$  in diameter, not incrusted; no gloeocystidia; cystidia heavily incrusted, often obtuse,  $40-90 \times 10-15\mu$ , protruding up to  $60\mu$ ; spores white in a spore collection, even, depressed on one side,  $7-10 \times 3-4\frac{1}{2}\mu$ .

Fructifications 2–5 cm. long,  $1-2\frac{1}{2}$  cm. wide.

On decaying wood of *Populus*, *Betula*, *Acer*, and undetermined frondose species. In Europe, and from Canada to Louisiana and westward to Oregon. May to January. Rare.

The type specimen of *P. guttulifera* differs from *P. pubera* in having no gloeocystidia whatever and in bearing on its surface minute, globular, shining masses of such aspect as occur on tips of the granules in *Odontia sudans*. Such masses are also borne

on specimens from France communicated by Bourdot, and they are stated to be borne on the cystidia—this in addition to the usual incrustation of these cystidia. Since the resinous-colored masses disappear in the liquids to which they are subjected in sectioning and making aqueous preparations for microscopic study, I am inclined to regard the presence of these masses as perhaps due to weather conditions prevalent when the specimens bearing them were collected—a helpful, confirmatory specific feature when present, but not a necessary morphological character of *P. guttulifera*. Hence I have included under *P. guttulifera*, specimens which have spores  $7-10 \times 3-4\frac{1}{2} \mu$ , lack gloecystidia, and have the aspect of *P. pubera*.

Specimens examined:

Finland: Mustiala, *P. A. Karsten*, type of *Gloeocystidium guttuliferum*, under the label *Gloeocystis guttulifera*.

Sweden: Femsjö, *E. A. Burt*; Göteborg, *L. Romell*, 295.

France: Allier, St. Priest, *H. Bourdot*, 6656, 8458.

Canada: Ottawa, *J. Macoun*, 130 a.

Maine: Kittery Point, *R. Thaxter & E. A. Burt*, 2 gatherings.

New Hampshire: Shelburne, *W. G. Farlow*, 3.

Vermont: Middlebury, *E. A. Burt*.

New Jersey: Newfield, *J. B. Ellis* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61398).

Alabama: Montgomery County, *R. P. Burke*, 212, 478 (in Mo. Bot. Gard. Herb., 57083, 57295).

Louisiana: *A. B. Langlois*, 256, comm. by U. S. Dept. Agr. Herb.

Ohio: Lancaster, *W. A. Kellerman*, 168, comm. by U. S. Dept. Agr. Herb.

British Columbia: Agassiz, *J. Macoun*, 129.

Oregon: Corvallis, *W. A. Murrill*, 940, comm. by N. Y. Bot. Gard. Herb., 55715.

+ 34. *P. flavido-alba* Cooke, *Grevillea* 8: 21. pl. 125, f. 14. 1879; Sacc. Syll. Fung. 6: 644. 1888; Masee, Linn. Soc. Bot. Jour. 25: 151. 1889.

Type: in Kew Herb.

Fructifications broadly effused, thin, closely adnate, cracking in drying, becoming cartridge-buff to pinkish buff in the her-

barium, setulose with the large cystidia, the margin indeterminate, thinning out; in section 75–250  $\mu$  thick, not colored, composed of densely interwoven, hyaline hyphae about 3  $\mu$  in diameter, not incrustated, and of very numerous large cystidia, many of which are often tilted in all directions; no gloeocystidia; cystidia heavily incrustated, cylindric-fusiform to conical, sharp-pointed, 60–120  $\times$  12–18  $\mu$ , numerous in all regions to the substratum, protruding up to 50  $\mu$  beyond the basidia; spores hyaline, even, white in a spore collection,  $4\frac{1}{2}$ –6  $\times$   $2\frac{1}{2}$ –3 $\frac{1}{2}$   $\mu$ .

Fructifications 5–15 cm. or more long, 2–5 cm. wide.

On bark of decaying limbs of *Carya*, *Liquidambar*, *Myrica*, *Quercus*, *Salix*, *Vitis*, and other frondose species. South Carolina to Louisiana, West Virginia and Ohio to Arkansas, and in the West Indies. July to April. Common.

*P. flavido-alba* resembles in aspect *P. pubera* with which it was confused by v. Höhnelt & Litschauer in their study of specimens distributed by Ravenel and by Ellis in their exsiccati, but differs sharply from *P. pubera* in absence of gloeocystidia and in having smaller spores. Its spores are smaller than those of *P. guttulifera*; it lacks layered structure, and the cystidia are much larger than in either *P. Ravenelii* or *P. Roumeguerii*. There may be observed in sectional preparations a curious tilting of many cystidia, some towards the right and some towards the left while most are erect and the tilting is at varying angles, being occasionally quite parallel with the substratum. Such tilting is unique among the species of *Peniophora* known to me and is best shown by the immersed cystidia in sections from the thicker fructifications. The type specimen in Kew Herbarium is on the same substratum, *Myrica*, as the specimens distributed in Ravenel, Fungi Am., 226, and impressed me as probably being from the same gathering.

Specimens examined:

Exsiccati: Bartholomew, Fungi Col., 4741; Ellis, N. Am. Fungi, 1209; Ell. & Ev., N. Am. Fungi, 3412; Ravenel, Fungi Am., 226.

South Carolina: *P. H. Rolfs*, 1622, 1625.

Georgia: Atlanta, *E. Bartholomew*, 5677, 5689 (in Mo. Bot. Gard. Herb., 44253); Darien, *H. W. Ravenel*, 2529, type (in

- Kew Herb.) and specimens in Ravenel, *Fungi Am.*, 226, and Ellis, *N. Am. Fungi*, 1209.
- Florida: *W. W. Calkins*, comm. by *W. G. Farlow* (in *Mo. Bot. Gard. Herb.*, 44634), and 628, comm. by *W. G. Farlow* (in *Mo. Bot. Gard. Herb.*, 44641, 44254); New Smyrna, *C. G. Lloyd*, 2128; Tallahassee, *E. Bartholomew*, 5722 (in *Mo. Bot. Gard. Herb.*, 44256).
- Alabama: Auburn, *F. S. Earle & C. F. Baker*, 2217 (in *N. Y. Bot. Gard. Herb.*, and *Mo. Bot. Gard. Herb.*, 61344); Montgomery County, *R. P. Burke*, 68, 147, 164, 169, 237, 444, 463, 465, 475, 667 (in *Mo. Bot. Gard. Herb.*, 18395, 7552, 44963, 44959, 57105, 57271, 57284, 57286, 57293, 63089).
- Louisiana: Abita Springs, *A. B. Langlois*, 2684; Baton Rouge, *Edgerton & Humphrey*, comm. by *C. J. Humphrey*, 5665; New Orleans, *E. Bartholomew*, in *Bartholomew, Fungi Col.*, 4741, and 5765 (in *Mo. Bot. Gard. Herb.*, 44265); *A. B. Langlois*, 460 (in *N. Y. Bot. Gard. Herb.*, and *Mo. Bot. Gard. Herb.*, 61476); St. Martinville, *A. B. Langlois*, 2680, comm. by *Lloyd Herb.*, 3529, and 1954, 2679, *aq. bt, cm, and cn.*
- West Virginia: Ellis Coll., 48 (in *N. Y. Bot. Gard. Herb.*, and *Mo. Bot. Gard. Herb.*, 61395).
- Ohio: Cincinnati, *C. G. Lloyd*, 4515, 4526, 4806.
- Kentucky: Crittenden, *C. G. Lloyd*, 3115; Mammoth Cave, *C. G. Lloyd*, 1602, and in *Ell. & Ev.*, *N. Am. Fungi*, 3412.
- Arkansas: Bigflat, *W. H. Long*, 19894 (in *Mo. Bot. Gard. Herb.*, 6387).
- Cuba: San Antonio de los Baños, Havana Province, *Earle & Merrill*, 88, comm. by *N. Y. Bot. Gard. Herb.*; Pinar del Rio Province, *Earle & Merrill*, 241, comm. by *N. Y. Bot. Gard. Herb.*; Santiago de las Vegas, *H. Hasselbring* (in *N. Y. Bot. Gard. Herb.*, and *Mo. Bot. Gard. Herb.*, 61468).
- Porto Rico: Rio Piedras, *J. A. Stevenson*, 3366, 5582, 6068 (in *Mo. Bot. Gard. Herb.*, 7574, 6944, 54685).
- Jamaica: Hall's Delight, *F. S. Earle*, 134, comm. by *N. Y. Bot. Gard. Herb.*

35. *P. vernicosa* Ellis & Everhart in herb., n. sp.

Type: in *N. Y. Bot. Gard. Herb.*, *Mo. Bot. Gard. Herb.*, and *Burt Herb.*

Fructifications long and broadly effused, very thin, closely adnate, pinkish buff in the herbarium, even, somewhat puberulent and setulose under a lens, not cracked, the margin thinning out, indeterminate; in section  $30\text{--}45\ \mu$  thick, not colored, composed of densely interwoven, hyaline hyphae about  $3\ \mu$  in diameter, indistinct; no gloecystidia; cystidia incrusted, fusiform,  $40\text{--}50 \times 10\text{--}15\ \mu$ , protruding up to  $50\ \mu$  beyond the basidia; spores hyaline, even,  $4\text{--}5 \times 3\text{--}3\frac{1}{2}\ \mu$ .

Fructifications 10–12 cm. long, 2–3 cm. wide.

On dead pieces of *Celtis*. Florida and Louisiana. August and March.

The 3 gatherings under the name *P. vernicosa* in Ellis Collection of New York Botanical Garden and duplicates of these communicated to me directly by Langlois seem to be thin forms of 3 species, 2 of which are well known. The type of *P. vernicosa* shows the location of the fructification by the pinkish buff color of the area covered, somewhat varnish-like effect produced, and cystidia visible under a lens. There is the bare possibility that *P. vernicosa* may be demonstrated to be the very early stage of *P. flavido-alba* but my knowledge of the latter does not at present warrant such a conclusion.

Specimens examined:

Florida: Cutler Hammock, *W. A. Murrill*, 86, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 62082).

Louisiana: St. Martinville, *A. B. Langlois*, 1965, type (in N. Y. Bot. Gard. Herb., Mo. Bot. Gard. Herb., 63726, and Burt Herb.).

**36. *P. texana* Burt, n. sp.**

Type: in Mo. Bot. Gard. Herb.

Fructifications long and broadly effused, adnate, thin, even, not shining, drying between cream-buff and pinkish buff and cracking transversely, the margin indeterminate, thinning out; in section about  $100\ \mu$  thick, not colored, with the hyphae indistinct, interwoven,  $3\text{--}3\frac{1}{2}\ \mu$  in diameter, not incrusted; cystidia incrusted, conical, often tilted, not colored,  $45\text{--}55 \times 10\text{--}12\ \mu$ , protruding beyond the basidia up to  $45\ \mu$ ; no gloecystidia nor conducting organs; spores copious, hyaline, even,  $4\frac{1}{2}\text{--}6 \times 3\text{--}4\frac{1}{2}\ \mu$ .

Fructifications up to 25 cm. long, 5 cm. broad.

On bark of *Juniperus sabinoides*. Texas. October. Only the type collection known.

Although occurring on bark of *Juniperus*, *P. texana* is not at all related to *P. laevigata* and seems rather to belong in the group of species of which *P. flavido-alba* is best known. The occurrence on *Juniperus*, the large expanse of the fructifications, and large cystidia and spores should afford recognition of *P. texana*.

Specimens examined:

Texas: Austin, *W. H. Long*, 21070, type (in Mo. Bot. Gard. Herb., 55134).

37. *P. flammea* Burt, n. sp.

Type: in Burt Herb. and N. Y. Bot. Gard. Herb.

Fructifications effused, adnate, very thin, olive-ocher to deep chrome, fading to clay color in the herbarium, hymenium often with some granules, the margin thinning out, paler; in section 50–90  $\mu$  thick, not colored and with no color changes by potassium hydrate solution, with hyphae 3  $\mu$  in diameter, interwoven next to the substratum but suberect, branching and granule-incrusted towards the hymenium; no gloeocystidia; wholly immersed cystidia incrusted, 15–60  $\times$  5–10  $\mu$ , few and scattered; hair-like cystidia not incrusted, 3–5  $\mu$  in diameter at base, protruding 20–30  $\mu$  beyond the basidia, are scattered in the surface of the hymenium; spores hyaline, even, 3½–5  $\times$  1½–2½  $\mu$ .

Fructifications 1–10 cm. long, 5 mm.–2½ cm. broad.

On rotting wood and bark of frondose species and on under side of rotting leaves of *Sabal*. Florida, Alabama, Texas, Cuba, and Bermuda. March to June. Probably rare.

*P. flammea* has the intense yellow color of *Corticium chrysocreas* and *Odontia Wrightii* but, unlike these species, its sections do not become vinaceous and then bleach when treated with potassium hydrate solution and the structural details of the sections are quite different also. *Peniophora sulphurina* is yellow and has small spores, but the fructification of *P. flammea* is as closely adnate to, and inseparable from, the substratum as that of *P. cinerea*.

Specimens examined:

Florida: Tarpon Springs, *W. A. Merrill*, 216, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 62121).

Alabama: Montgomery, *R. P. Burke*, 3, 158 (in Mo. Bot. Gard. Herb., 17431, 44962).

Texas: Austin, *W. H. Long*, 524.

Cuba: *C. G. Lloyd*, 421 (in Mo. Bot. Gard. Herb., 55172); El Yunque Mt., Baracoa, *L. M. Underwood & F. S. Earle*, 1215, type, comm. by N. Y. Bot. Gard. Herb.

Bermuda: Paget Swamp, *H. H. Whetzel*, *Abe* (in Mo. Bot. Gard. Herb., 58905).

**38. *P. isabellina* Burt, n. sp.**

Type: in Burt Herb.

Fructifications longitudinally effused, very thin, closely adnate, not at all separable, between light pinkish cinnamon and avel-laneous, not shining, becoming somewhat minutely cracked, the margin thinning out; in section 50–75  $\mu$  thick, not colored, composed of innumerable cystidia and densely arranged hyphae 2½–3  $\mu$  in diameter, indistinct; no gloeocystidia; cystidia incrustated, 30  $\times$  6  $\mu$ , protruding up to 12  $\mu$ , fusoid, usually starting from the substratum; spores 6  $\times$  3  $\mu$  present but so few found that they may not belong.

Fructification 8 cm. long and broken off at both ends, 1 cm. broad.

On dead canes of blackberry (*Rubus*), and perhaps on other frondose wood. Virginia and Alabama. June to September.

*P. isabellina* is as closely adnate as *P. cinerea* and *P. versicolor*, from both of which it differs in not being colored in section. The occurrence of the type on blackberry stems may be helpful in recognizing this species, but several other species also occur on blackberry stems. The specimen from Alabama, referred to *P. isabellina*, is probably specifically distinct.

Specimens examined:

Virginia: Woodstock, *C. L. Shear*, 1191, type.

Alabama: Montgomery County, *R. P. Burke*, 62 (in Mo. Bot. Gard. Herb., 18207).

**39. *P. coccineo-fulva* (Schw.) Burt, n. comb.**

*Phlebia coccineo-fulva* Schweinitz, Am. Phil. Soc. Trans. N. S.

4: 165. 1832; Sacc. Syll. Fung. 11: 112. 1895.—*Corticium rhodellum* Peck, N. Y. State Mus. Rept. 42: 122. 1889.—*Peniophora rhodella* (Peck) Sacc. Syll. Fung. 9: 239. 1891.—*Peniophora Karstenii* Masee, Linn. Soc. Bot. Jour. 25: 153. 1889.—*Corticium calotrichum* Karsten, Rev. Myc. 10: 73. 1888; Soc. pro Fauna et Fl. Fenn. Meddel. 16: 21. 1888; Icones Hym. Fenn. 3: 7. pl. 4, f. 71. 1891; Sacc. Syll. Fung. 6: 617. 1888; 9: 232. 1891.—*Peniophora rhodochroa* Bresadola, Mycologia 17: 70. 1925.—*Peniophora leprosa* Bourdot & Galzin, Soc. Myc. Fr. Bul. 28: 394. 1913.

Type: in Schweinitz Herb. and Farlow Herb.

Fructifications effused, adnate, becoming russet to Natal brown in the herbarium, sometimes cracked, the margin paler; in section typically vinaceous russet but sometimes not colored, 150–400  $\mu$  thick, 2-layered, the layer next to substratum 100–300  $\mu$  thick, composed of loosely interwoven, thin-walled hyphae 4–8  $\mu$  in diameter, with many rough-walled or incrusted, the hymenial layer very dense, typically colored, bearing the cystidia; cystidia hyaline or slightly colored, incrusted, 40–80  $\times$  10–14  $\mu$ , protruding up to 50  $\mu$ ; spores hyaline, even, 4–5  $\times$  2½  $\mu$ .

Fructifications 4–10 cm. long, 2 cm. broad.

On rotting wood and bark of *Juglans*, *Quercus*, and other frondose species, rarely on conifers. Canada to Alabama and westward to British Columbia and California, and in Mexico; occurs in Europe also. July to December. Frequent.

*P. coccineo-fulva* has been confused with *P. velutina*, from which it differs when best developed, in more intense color, the vinaceous subhymenial layer often showing this color on edges of cracks in the fructification, and in the incrusted hyphae. Paler specimens which are not otherwise distinguishable from *P. velutina* I have now referred to *P. coccineo-fulva* when they have the large, incrusted hyphae of the latter, for the European concept of *P. velutina*, as shown by specimens under this name in Kew Herbarium and communicated to me by Bourdot, Bresadola, Romell, and Litschauer, has the hyphae not incrusted, with the exception of additional specimens from Bresadola and Romell which they distinguished as different from *P. velutina* by labelling as "*Peni-*

*ophora velutina* Fr. f. *pallidior*," and which I cite below as *P. coccineo-fulva*. These European specimens have exactly the same structure as the authentic specimen of *Corticium calotrichum* sent to me by Karsten, who noted the large rough hyphae in the description in *Icones Hym. Fenn.* 3: 7, but the hyphae are really granule-incrusted.

Specimens examined:

Exsiccati: Ell. & Ev., *N. Am. Fungi*, 2019, under the name *Peniophora velutina*; Ell. & Ev., *Fungi Col.*, 707, under the name *Peniophora velutina*; Rabenhorst, *Fungi Eur.*, 3231, under the name *Corticium alneum*, the type distribution of *Peniophora Karstenii*.

Finland: Mustiala, *P. A. Karsten*, authentic specimen of *Corticium calotrichum*, and in Rabenhorst, *Fungi Eur.*, 3231.

Sweden: Femsjö, *L. Romell*, 421; on *Fagus*, Hangnen, Femsjö, *E. A. Burt*.

Germany: *Brinkmann*, comm. by Bresadola as *Peniophora velutina* Fr. f. *pallidior*.

France: Aveyron, *A. Galzin*, 26563, comm. by H. Bourdot, 32878, authentic specimen of *Peniophora leprosa*.

Canada: Hull, Quebec, *J. Macoun*, 197; Lambeth, Ontario, *J. Dearness*, D 172b (in *Mo. Bot. Gard. Herb.*, 5482); Granton, *J. Dearness*, 966 (in *Mo. Bot. Gard. Herb.*, 22582); Ottawa, *J. Macoun* 197, 291, and *J. M. Macoun*, 230 (in *N. Y. State Mus. Herb.*, and *Mo. Bot. Gard. Herb.*, 55756, 55920, 56081 respectively).

New Brunswick: Campobello, *W. G. Farlow*, 2 (in part).

Maine: Boarstone Mountain, Piscataquis County, *W. A. Murrill*, 2404 (in *N. Y. Bot. Gard. Herb.*, and *Mo. Bot. Gard. Herb.*, 61354).

New Hampshire: Chocorua, *W. G. Farlow*, 43 (in *Mo. Bot. Gard. Herb.*, 43972); North Conway, *A. S. Rhoads*, 10 (in *Burt Herb.*, and *Mo. Bot. Gard. Herb.*, 56979).

Vermont: Middlebury, *E. A. Burt*, 2 gatherings.

New York: Albany, *H. D. House* (in *N. Y. State Mus. Herb.*, and *Mo. Bot. Gard. Herb.*, 59703); Alcove, *C. L. Shear*, 1309; Floodwood, *C. H. Peck* (in *N. Y. State Mus. Herb.*, *Burt Herb.*, and *Mo. Bot. Gard. Herb.*, 55986); Hudson Falls,

- S. H. Burnham*, 36 (in Mo. Bot. Gard. Herb., 54457); Ithaca Flats, *G. F. Atkinson*, 3090; Karner, *H. D. House* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 54368); Lyndonville, *C. E. Fairman*, type of *Corticium rhodellum* (in N. Y. State Mus. Herb.); Westport, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55968).
- New Jersey: Belleplain, *C. L. Shear*, 1242; Newfield, *J. B. Ellis*, in Ell. & Ev., N. Am. Fungi, 2019, and Fungi Col., 707, and (in Burt Herb., N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 57337, 63455).
- Maryland: Takoma Park, *C. L. Shear*, 1335.
- Pennsylvania: Nazareth, *Schweinitz*, type of *Phlebia coccineo-fulva* (in Herb. Schweinitz and Farlow Herb.).
- Alabama: Auburn, comm. by Alabama Biological Survey; Montgomery, *R. P. Burke*, 72, 188, 635 (in Mo. Bot. Gard. Herb., 17582, 57068, 63072).
- Ohio: Cincinnati, *C. G. Lloyd*, 2808.
- Michigan: Ann Arbor, *C. H. Kauffman*, 35 (in Mo. Bot. Gard. Herb., 20025); New Richmond, *C. H. Kauffman*, 26 (in Mo. Bot. Gard. Herb., 16386); Vermilion, *A. H. W. Povah*, 5 (in Mo. Bot. Gard. Herb., 9225).
- Wisconsin: Lake Geneva, *E. T. & S. A. Harper*, 834, 961; Madison, *C. J. Humphrey & M. C. Jensen*, 631 (in Mo. Bot. Gard. Herb., 10275).
- Colorado: Pike's Peak, *G. G. Hedgcock*, comm. by C. J. Humphrey, 2554 (in Mo. Bot. Gard. Herb., 9782).
- Idaho: Priest River, *J. R. Weir*, 131 (in Mo. Bot. Gard. Herb., 15762), and 16809, type of *Peniophora rhodochroa* (in Weir Herb. and Mo. Bot. Gard. Herb., 63690).
- British Columbia: Kootenai Mts. near Salmo, *J. R. Weir*, 535 (in Mo. Bot. Gard. Herb., 21995).
- California: Big Wash Cañon, Santa Catalina Island, *L. W. Nuttall*, 889, comm. by Field Mus. Nat. Hist. Herb. (in Mo. Bot. Gard. Herb., 57650).
- Arizona: Coronado Nat. Forest, *G. G. Hedgcock*, comm. by C. J. Humphrey, 2547 (in Mo. Bot. Gard. Herb., 9906).
- Mexico: Jalapa, *W. A. & E. L. Murrill*, 144, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 6962).

40. *P. laevis* (Fr.) Burt in R. Fries, R. Sci. Soc. Gothoburgens Actis IV. 3: [36]. 1900; in Peck, N. Y. State Mus. Bul. 54: 954. 1902; v. Höhnelt & Litschauer, K. Akad. Wiss. Wien Sitzungsber. 115: 1550. 1906; Bourdot & Galzin, Soc. Myc. Fr. Bul. 28: 398. 1913; Rea, Brit. Basid. 692. 1922.

*Thelephora laevis* Fries, Elenchus Fung. 1: 206. 1828. Not *T. laevis* Persoon.—*Corticium laeve* Fries, Epicr. 560. 1838; Hym. Eur. 649. 1874.—*Kneiffia laevis* (Fries) Bresadola, Ann. Myc. 1: 99. 1903.

Type: authentic specimen in Kew Herb.

Fructifications effused, membranaceous, adnate, separable from the substratum when moistened, drying light pinkish cinnamon to buff-pink and ochraceous buff, the margin radiately fibrillose; in section not colored, 300–400  $\mu$  thick, with the hyphae 3–4½  $\mu$  in diameter, not colored, granule-incrusted, densely crowded together and running parallel with the substratum and then ascending obliquely into the hymenium; cystidia incrusted or not incrusted, 40–60  $\times$  4½–9  $\mu$ , protruding up to 30  $\mu$ , confined to the hymenial layer; spores white in a spore collection, even, 4½–6  $\times$  2½–3  $\mu$ .

Fructifications 2–10 cm. long, 2–4 cm. broad.

On bark of frondose species. Europe, New Brunswick to Texas and westward to Washington and Oregon, in Cuba and in Island of Guam and in Japan. July to October. Not common.

*Peniophora laevis* is one of the species which Karsten understood as *Corticium radiosum* and sent under this name to Fries, as shown by the specimens in Herb. Fries determined by Karsten, and preserved by Fries without comment. Bresadola collected the species occasionally and communicated to me duplicates under the herbarium name *Peniophora albo-gilvida*. The above specimens agree in aspect with the authentic specimen of *Corticium laeve* from Fries in Kew Herb. and also agree with it in the details of microscopic structure including incrusted hyphae, smaller than those of *Peniophora coccineo-fulva* and more compactly and more longitudinally arranged than those of *P. sanguinea*. *P. affinis* does not have its hyphae at all incrusted.

Specimens examined:

Sweden: authentic specimen (in Kew Herb.); on *Betula*, *L. Romell*, 122; Gottenburg, *L. Romell*, 120; Stockholm, *L. Romell*, 358.

Finland: *P. Karsten*, 32 (in Fries Herb., under the name *Corticium radiosum*); Mustiala, *P. Karsten*, under the name *C. radiosum*, comm. by Bresadola, and also on *Alnus* under the name *Peniophora velutina*.

Russian Poland: *Eichler*, 107, comm. by Bresadola.

France: Allier, St. Priest, *H. Bourdot*, 8981, under the name *P. Eichleriana*.

Italy: Trient, Alps Mts., *Bresadola*, two specimens.

New Brunswick: Campobello, *W. G. Farlow*, 2.

New Hampshire: Chocorua, *W. G. Farlow*, 12 (in Burt Herb.) and *C* 35, *C* 38, 40 (in Mo. Bot. Gard. Herb., 43963, 43967, 43971).

Vermont: Middlebury, *E. A. Burt*, three gatherings.

Massachusetts: Magnolia, *W. G. Farlow*; Williamstown, *W. G. Farlow*, 9.

New York: East Galway, *E. A. Burt*; East Schaghticoke, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55758); East Schodack, *C. H. Peck*, 12; Hague, *C. H. Peck*, 2; Ithaca, *G. F. Atkinson*, 4598; North Greenbush, *H. D. House*, 14,234 (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 44733); Snyder, *C. H. Peck*, 16.

New Jersey: Newfield, *J. B. Ellis*, 2020, comm. by *W. G. Farlow*, 22 (in Mo. Bot. Gard. Herb., 7943).

Virginia: Crabbottom, *W. A. Murrill*, 169, 259 (in N. Y. Bot. Gard. Herb., 61557, 61568).

Alabama: Montgomery County, *R. P. Burke*, 129, 213, 813 (in Mo. Bot. Gard. Herb., 11034, 57085, 63115).

Texas: Gonzales, *C. L. Shear*, 1231.

Kentucky: Crittenden, *C. G. Lloyd*, 10113 (in Mo. Bot. Gard. Herb., 58689).

Ohio?: locality not stated, *C. G. Lloyd*, 4195.

Michigan: New Richmond, *C. H. Kauffman*, 47 (in Mo. Bot. Gard. Herb., 3259).

Wisconsin: Blue Mounds, *E. T. & S. A. Harper*, 943; Lake Geneva, *E. T. & S. A. Harper*, 836; Palmyra, *A. O. Stucki*, 53.

- Missouri: Perryville, *R. A. Studhalter & L. O. Overholts*, 2706 (in *Mo. Bot. Gard. Herb.*, 44290).  
Nebraska: Lincoln, *C. L. Shear*, 540.  
Idaho: Priest River, *J. R. Weir*, 608 (in *Mo. Bot. Gard. Herb.*, 63196).  
British Columbia: Sidney, *J. Macoun*, 10 (in *Mo. Bot. Gard. Herb.*, 5728).  
Washington: Bingen, *W. N. Suksdorf*, 764; Arlington, *C. J. Humphrey*, 7610.  
Oregon: Eugene, *C. J. Humphrey*, 6061; Tidewater, *S. M. Zeller*, 1985 (in *Mo. Bot. Gard. Herb.*, 58762).  
Cuba: Ceballos, *C. J. Humphrey*, 2805.  
Island of Guam: *Edwards*, comm. by *J. R. Weir*, 10765 (in *Mo. Bot. Gard. Herb.*, 56238).  
Japan: Mt. Mikuma, Prov. Awaji, *A. Yasuda*, 62 (in *Mo. Bot. Gard. Herb.*, 56138).

41. *P. subiculosa* Burt, n. sp.

Type: in *Mo. Bot. Gard. Herb.* and *N. Y. Bot. Gard. Herb.*

Fructifications effused, somewhat membranaceous, tender, small pieces separable when moist, with the hymenium drying cartridge-buff, pulverulent, here and there cracked and showing the whitish subiculum which is pale chamois-colored next to the substratum and connected with chamois-colored marginal mycelial strands or cords; in section 400–500  $\mu$  thick, not distinctly colored, with the hyphae loosely interwoven, hyaline, 4  $\mu$  in diameter, not nodose-septate, granule-incrusted in all regions with large crystalline granules; cystidia heavily incrusted, 20–60  $\times$  9  $\mu$ , protruding up to 15  $\mu$ , confined to the hymenium; spores hyaline, even, 3–3½  $\times$  2½  $\mu$ , borne 4 to a basidium.

Fructifications 2–3 cm. long, 1 cm. broad.

On humus of frondose wood. Mexico. December. Only one collection known.

*P. subiculosa* is related to *P. Burtii* but differs from it in having larger and incrusted cystidia and all hyphae heavily incrusted.

Specimens examined:

Mexico: Guernavaca, *W. A. & E. L. Merrill*, 396, type (in *N. Y. Bot. Gard. Herb.*, and *Mo. Bot. Gard. Herb.*, 54550).

**42. *P. septocystidia* Burt, n. sp.**

Type: in N. Y. Bot. Gard. Herb., Mo. Bot. Gard. Herb., and Burt Herb.

Fructifications effused, the small patches becoming more or less confluent, membranaceous, separable, between warm buff and cinnamon-buff in the herbarium, somewhat tubercular through conforming to the irregularities of the substratum, the margin byssoid, with some mycelial strands; in section 250–400  $\mu$  thick, not colored, 2-layered, the layer next to the substratum much the thicker, composed of very loosely interwoven, incrusting hyphae 4–5  $\mu$  in diameter under the incrustation, not nodose-septate, the hymenial layer dense, 35–45  $\mu$  thick; no gloeocystidia; cystidia incrusting with a few, large, somewhat colored granules, transversely septate, 5  $\mu$  in diameter under the incrustation, protruding 30–35  $\mu$ , scattered along surface of hymenium; spores hyaline, even, cylindric, curved,  $5-7 \times 2\frac{1}{2}-3 \mu$ .

Fructifications 5 mm.–2½ cm. in diameter after confluence.

On decaying bark and humus. West Indies. January.

*P. septocystidia* is somewhat related to *P. sanguinea*, *P. Burtii*, and *P. subiculosa*, but is of different color, with very coarse hyphae and noteworthy cystidia.

Specimens examined:

Jamaica: Troy and Tyre, Cockpit Country, W. A. Murrill & W. Harris, 860, type (in Burt Herb., N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61490).

**43. *P. canadensis* Burt, n. sp.**

Type: in Burt Herb.

Fructification effused, adnate, dry, hypochnoid, small pieces separable when moistened, cream-color in the herbarium, even, tomentose under a lens, not shining, the margin thinning out, of finely interwoven hyphae; in section 300–350  $\mu$  thick, not colored, stratose, each of the two strata composed of loosely arranged, erect, branching, nodose-septate, somewhat incrusting hyphae 4–6  $\mu$  in diameter, which are slightly colored near the substratum and hyaline elsewhere, and of a more compact hymenial layer containing cystidia; no gloeocystidia; cystidia incrusting, cylin-

dric,  $50-90 \times 6-9 \mu$ , protruding up to  $45 \mu$ , very numerous in the hymenium; basidiospores hyaline, even,  $7-8 \times 4-5 \mu$ , copious, four to a basidium; other spherical spores  $3\frac{1}{2}-4 \mu$  in diameter are present in addition to immersed basidiospores in the buried hymenium.

Fructification  $2\frac{1}{2}$  cm. long, 2 cm. wide, broken off at both ends.

On wood of coniferous log and bark of *Fraxinus*. Canada and New York. September and October.

The type of *P. canadensis* somewhat resembles *P. pubera* in aspect but has texture more suggestive of *Coniophora byssoidea*. Such aspect, together with the coarse hyphae, large spores, and numerous large cystidia should fix the species. Unfortunately, the type consists of but a single piece of the dimensions stated, which was present in a packet of *Corticium bombycinum*. The New York gathering consists of a group of very small fructifications only one stratum thick.

Specimens examined:

Canada: locality not given, *J. Macoun*, 60 (in part), type.

New York: Ithaca, *G. F. Atkinson*, Cornell Univ. Herb., 8282.

44. *P. cremea* Bresadola, Fungi Trid. 2: 63. pl. 173, f. 2. 1898; Sacc. Syll. Fung. 16: 195. 1902; Bourdot & Galzin, Soc. Myc. Fr. Bul. 28: 396. 1913; Wakefield, Brit. Myc. Soc. Trans. 5: 131. 1914; Rea, Brit. Basid. 691. 1922.

*Kneiffia cremea* Bresadola, Ann. Myc. 1: 100. 1903.—An *Corticium Eichlerianum* Bresadola, Ann. Myc. 1: 95. 1903?

Type: in Bresadola Herb. probably, authentic specimens in Burt Herb.

Fructifications broadly effused, membranaceous, separable, white or cream-color to ochraceous buff and darkening somewhat in the herbarium, sometimes cracking when dry and showing the white subiculum, the margin white and cobwebby; in section  $100-300 \mu$ , rarely  $500 \mu$ , thick, not colored, composed of a broad layer next to the substratum of thick-walled, hyaline, erect hyphae  $4\frac{1}{2}-6 \mu$  in diameter, branching at a wide angle, sometimes dichotomously, more or less granule-incrusted towards the hymenial layer; hymenial layer dense, bearing protruding cystidia even-walled or incrusted about the apex and containing also immersed,

incrusted cystidia when thickened; protruding cystidia cylindric or tapering towards the apex, 5–10  $\mu$  in diameter at the base, protruding up to 60  $\mu$  beyond the basidia; immersed cystidia 40–60  $\times$  9–10  $\mu$ ; no gloecystidia; spores white in a spore collection, even, 5–8  $\times$  2½–3½  $\mu$ .

Fructifications 4–15 cm. long, 2–4 cm. wide.

On bark-covered and decorticated branches of frondose species on the ground. In Europe, Canada to Louisiana, and westward to the Pacific States and in Japan and in Natal, Africa. May to January. Infrequent but widely distributed.

*P. cremea* is readily recognizable among the species of the northern United States and Canada by its thick, white or creamy fructifications which have small spores, lack gloecystidia, and are 2-layered with the thick under layer composed of coarse, loosely arranged, erect hyphae branching at an angle of towards 60° and often dichotomously. These hyphae and their arrangement are distinctive. *P. mutata* has the same aspect and color but differs by much longer spores and the presence of gloecystidia. *P. velutina* has its hyphae ascending obliquely to the hymenial layer.

Specimens examined:

Sweden: *L. Romell*, 196; *Femsjö*, *L. Romell*, 218.

Germany: Westphalia, Lengerich, *Brinkmann*, 341, determined and communicated by Bresadola.

Russian Poland: *Eichler*, determined and communicated by Bresadola.

Austria: Tirol, Gries, *V. Litschauer*; Innsbruck, *V. Litschauer*; Stiermark, *V. Litschauer*.

France: Aveyron, *M. Galzin*, 13292, comm. by H. Bourdot, 20856.

England: Doncaster, *E. M. Wakefield* (in Mo. Bot. Gard. Herb., 57126).

Canada: *J. Macoun*, 24.

New Hampshire: Chocorua, *E. A. Burt*.

Vermont: Bristol, *E. A. Burt*, two gatherings; Middlebury, *E. A. Burt*, two gatherings.

Massachusetts: Magnolia, *W. G. Farlow*, a; Sharon, *A. P. D. Piguet*, comm. by W. G. Farlow.

New York: East Galway, *E. A. Burt*, three gatherings; Bergen

- Swamp, Genesee County, *H. D. House* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 57473).
- New Jersey: Newfield, *J. B. Ellis*, 68 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 63425).
- District of Columbia: *W. A. Murrill*, 1496 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 63453, 63465).
- Alabama: Montgomery County, *R. P. Burke*, 800 (in Mo. Bot. Gard. Herb., 63108).
- Louisiana: St. Martinville, *A. B. Langlois*, *k*, 1386, 1963, 2631 (in Burt Herb., N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 63456, 63503).
- Michigan: Gogebic County, *E. A. Bessey*, 321 (in Mo. Bot. Gard. Herb., 56543).
- Montana: Rexford, *E. E. Hubert*, comm. by *J. R. Weir* (in Weir Herb., and Mo. Bot. Gard. Herb., 63246).
- Idaho: Coolin, *J. R. Weir*, 11499, 11575 (in Mo. Bot. Gard. Herb., 63261, 63303), and an unnumbered specimen (in Weir Herb., and Mo. Bot. Gard. Herb., 63247); Priest River, *J. R. Weir*, 609 (in Mo. Bot. Gard. Herb., 63197).
- Manitoba: Swan River, *G. R. Bisby*, 1049 (in Mo. Bot. Gard. Herb., 59036); Winnipeg, *G. R. Bisby*, 1117 (in Mo. Bot. Gard. Herb., 59040).
- British Columbia: Sidney, *J. Macoun*, 23, 28, 73, 82, 104, 834 (in Mo. Bot. Gard. Herb., 5757, 55335, 5758, 5759, 55337, 55334).
- Washington: Bingen, *W. N. Suksdorf*, 867; Chehalis, *C. J. Humphrey*, 6260; Everson, *C. J. Humphrey*, 7453; Kalama, *C. J. Humphrey*, 6205.
- Oregon: Corvallis, *S. M. Zeller*, 1867 (in Mo. Bot. Gard. Herb., 56871); Eugene, *C. J. Humphrey*, 6088.
- California: Palo Alto, *W. A. Murrill*, 1173, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 55706); Santa Catalina Island, Grand Canyon, *L. W. Nuttall*, 1060, comm. by Field Mus. Herb. (in Mo. Bot. Gard. Herb., 58883).
- Japan: Sendai, *A. Yasuda*, 46 (in Mo. Bot. Gard. Herb., 56160); Mt. Mikuma, Prov. Awaji, *A. Yasuda*, 53 (in Mo. Bot. Gard. Herb., 56161).
- Africa: Natal, Durban, *P. A. van der Bijl*, 612 (in Mo. Bot. Gard. Herb., 59377).

45. *P. velutina* (DC) Cooke, *Grevillea* 8: 21. *pl.* 125, *f.* 15. 1879; Sacc. *Syll. Fung.* 6: 644. 1888; Masee, *Linn. Soc. Bot. Jour.* 25: 152. 1889; Bourdot & Galzin, *Soc. Myc. Fr. Bul.* 28: 398. 1913; Rea, *Brit. Basid.* 692. 1922.

*Thelephora velutina* De Candolle, *Fl. Fr.* 6: 33. 1815; Fries, *Elenchus Fung.* 1: 203. 1828.—*Corticium velutinum* (DC) Fries, *Epier.* 561. 1838; *Hym. Eur.* 650. 1874.—*Kneiffia velutina* (DC) Bresadola, *Ann. Myc.* 1: 100. 1903.

Fructifications broadly effused, membranaceous, separable, becoming vinaceous buff to fawn color in the herbarium, minutely velvety, the margin whitish, often extended in branching mycelial strands; in section not colored, 250–500  $\mu$  thick, composed of loosely interwoven hyphae up to 5–8  $\mu$  in diameter, not incrustated, only very rarely nodose-septate; cystidia incrustated, 40–100  $\times$  8–15  $\mu$ , wholly immersed in the hymenial tissue or protruding up to 50  $\mu$ ; spores white in spore falls, even,  $4\frac{1}{2}$ – $5\frac{1}{2}$   $\times$   $2\frac{1}{2}$ –3  $\mu$ .

Fructifications 3–20 cm. long, 2–15 cm. broad.

On decaying limbs and logs of such frondose species as *Fagus*, *Quercus*, *Castanea*, *Populus*, etc., more rarely on coniferous wood. Throughout Canada and the United States and in Europe. May to December. Frequent.

*P. velutina* may be recognized by its large and rather thick fructifications of pinkish or vinaceous color when dry, separable from the substratum when moistened, by frequent presence of marginal mycelial strands, and by the coarse, non-incrustated hyphae—often up to 8  $\mu$  in diameter—present in sectional preparations near the substratum.

Specimens examined:

Sweden: *L. Romell*, 121, 133; Stockholm, *L. Romell*, 137.

Poland: *Eichler*, from Bresadola.

Austria: Tirol, *V. Litschauer*.

France: Cormatin, *F. Guillemin*, 10, in part; St. Priest, Allier, *H. Bourdot*, 20859.

Canada: *J. Macoun*, 231, comm. by W. G. Farlow (in *Mo. Bot. Gard. Herb.*, 14763); Ontario, Casselman, *J. Macoun*, 366.

New Hampshire: Chocorua, *W. G. Farlow*, 71 (in *Mo. Bot. Gard. Herb.*, 43973).

- Vermont: Ripton, *E. A. Burt*.
- Massachusetts: *R. J. Blair*, comm. by *L. O. Overholts*, 3812 b (in *Mo. Bot. Gard. Herb.*, 54994).
- New York: Alcove, *C. L. Shear*, 1198; East Galway, *E. A. Burt*, two gatherings: Floodwood, *C. H. Peck* (in *N. Y. State Mus. Herb.*, and *Mo. Bot. Gard. Herb.*, 55967), *E. A. Burt*; Karner, *H. D. House* (in *N. Y. State Mus. Herb.*, and *Mo. Bot. Gard. Herb.*, 54393).
- New Jersey: Alpine, *P. Wilson*, 29 (in *Mo. Bot. Gard. Herb.*, 54748).
- Pennsylvania: State College, *L. O. Overholts*, 3326 (in *Mo. Bot. Gard. Herb.*, 9533).
- Alabama: Montgomery County, *R. P. Burke*, 419 (in *Mo. Bot. Gard. Herb.*, 57259).
- Tennessee: Elkmont, *C. H. Kauffman*, 73 (in *Mo. Bot. Gard. Herb.*, 54330).
- Michigan: New Richmond, *C. H. Kauffman*, 54 (in *Mo. Bot. Gard. Herb.*, 11996); Seney, *C. J. Humphrey*, 1596 (in *Mo. Bot. Gard. Herb.*, 17541).
- Wisconsin: Madison, *C. J. Humphrey*, 2156 (in *Mo. Bot. Gard. Herb.*, 6729).
- Illinois: Anna, *C. J. Humphrey*, 2044 (in *Mo. Bot. Gard. Herb.*, 21525).
- Montana: Bernice, *E. E. Hubert*, comm. by *J. R. Weir* (in *Mo. Bot. Gard. Herb.*, 63250); Yellowstone, *F. S. Wolpert*, comm. by *J. R. Weir*, 3934 (in *Mo. Bot. Gard. Herb.*, 55179).
- Colorado: Pike's Peak, *G. G. Hedgcock*, comm. by *C. J. Humphrey*, 2543 (in *Mo. Bot. Gard. Herb.*, 20783).
- Idaho: Priest River, *J. R. Weir*, 618 (in *Mo. Bot. Gard. Herb.*, 63200).
- British Columbia: Kootenai Mts., near Salmo, *J. R. Weir*, 512 (in *Mo. Bot. Gard. Herb.*, 3772); Sidney, *J. Macoun*, 34, 42 (in *Mo. Bot. Gard. Herb.*, 55341, 55345).
- Washington: Bingen, *W. N. Suksdorf*, 703.
- Oregon: Grant's Pass, *J. R. Weir*, 8687 (in *Mo. Bot. Gard. Herb.*, 63199).
- New Mexico: Tyom Experiment Station, *W. H. Long*, 21898 (in *Mo. Bot. Gard. Herb.*, 55121).

○ 46. *P. affinis* Burt, n. sp.

Name without description in Peck, N. Y. State Mus. Bul. 54: 954. 1902.

Type: in Burt Herb.

Fructifications broadly effused, membranaceous, adnate, separable when moistened, drying light buff to pinkish buff and light pinkish cinnamon, often cracked and showing the paler subiculum in the crevices, the margin paler, radiately fibrillose; in section not colored, 300–500  $\mu$  thick, with the hyphae hyaline, 3–5  $\mu$  in diameter, not at all incrustated, arranged densely and longitudinally in a broad layer along the substratum and then ascending obliquely into the hymenial layer; cystidia incrustated or not incrustated, 30–60  $\times$  5–8  $\mu$ , protruding up to 30  $\mu$ , occurring in the hymenial layer only; spores white in a spore collection, even,  $4\frac{1}{2}$ –6  $\times$   $2\frac{1}{2}$ –3  $\mu$ .

Fructifications 3–20 cm. long, 2–4 cm. broad.

On bark and decorticated logs and limbs of frondose species. Canada to New York and westward to Oregon, and also in Europe. July to October. Common.

*P. affinis* is related in aspect to *P. laevis* and has hyphae of the same diameter and arrangement as those of the latter species but not at all incrustated. The fructifications of *P. affinis* are usually thicker than those of *P. laevis*, less adnate to the substratum, paler and more cracked. Pale specimens of *P. sanguinea* crack into somewhat similar areas but show a somewhat colored, floccose subiculum in the fissures. The hyphae of *P. affinis* are of smaller diameter than those of *P. velutina*.

Specimens examined:

✕ Exsiccati: Reliq. Farlowianae, 343, under the name *Peniophora laevis*. L + L. 77

Sweden: L. Romell, 123, 124, both under the name *P. velutina*.

Austria: Tirol, V. Litschauer, under the name *P. laevis*.

France: Allier, H. Bourdot, 8579, under the name *P. laevis*.

Canada: J. Macoun, 76, comm. by N. Y. State Mus. Herb. (in Mo. Bot. Gard. Herb., 57510).

Quebec: Hull, J. Macoun, 220.

Ontario: Jefferson, G. H. Graham, comm. by Univ. Toronto Herb., 674 (in Mo. Bot. Gard. Herb., 44924).

Maine: Kittery Point, *R. Thaxter* & *E. A. Burt*.

New Hampshire: Chocorua, *W. G. Farlow*, 35 and two unnumbered specimens in Burt Herb., Reliq. Farlowianae, 343, and *C* 36, 41, 69 (in Mo. Bot. Gard. Herb., 43964, 43969, 43970 respectively), *E. A. Burt*, three gatherings; North Conway, *L. O. Overholts*, 5106 (in Mo. Bot. Gard. Herb., 56356).

Vermont: Middlebury, *E. A. Burt*, type and another gathering.

Massachusetts: North Scituate, *W. G. Farlow*.

New York: Albany, *H. D. House* (in N. Y. State Mus. Herb. and Mo. Bot. Gard. Herb., 14835); East Galway, *E. A. Burt*, six gatherings; Jamesville, *L. M. Underwood* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 63419); Karner, *H. D. House* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 54348, 54352, 54371); Oneida, *H. D. House* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 59681); Snyder, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55757); Syracuse, *L. M. Underwood*, 116 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61485); West Fort Ann, *S. H. Burnham*, 12 (in Mo. Bot. Gard. Herb., 44002).

Tennessee: Elkmont, *C. H. Kauffman*, 68 (in Mo. Bot. Gard. Herb., 1680).

Illinois: Glencoe, *E. T. & S. A. Harper*, 650, 820.

Wisconsin: Madison, *C. J. Humphrey*, 2159 (in Mo. Bot. Gard. Herb., 4597).

Oregon: Corvallis, *W. A. Murrill*, 1011, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 55714).

Jamaica: *Farr*, 1617 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61489). This reference is doubtful for the hymenium is in poor condition.

**47. *P. inflata* Burt, n. sp.**

Type: in Burt Herb. and probably in N. Y. Bot. Gard. Herb.

Fructifications effused, thin, tender, soft, membranaceous, separable, brittle when dry and cream color to cream-buff, the subiculum and margin white and cottony; in section 150  $\mu$  thick, not colored, 2-layered, consisting of (1) a layer next to substratum 75  $\mu$  thick of loosely arranged, thin-walled, lax, hyaline hyphae  $2\frac{1}{2}$ –3  $\mu$  in diameter bearing short lateral branches, each with 2

moniliform inflations, and of (2) a hymenial layer of erect hyphae densely arranged, and of numerous cystidia in all regions of this layer; no gloeocystidia; cystidia incrustated or not incrustated,  $15-24 \times 3-3\frac{1}{2} \mu$ , protruding up to  $18 \mu$  beyond the basidia; spores colorless, even,  $3 \times 2-2\frac{1}{2} \mu$ , flat on one side, copious.

Fructifications 3-4 cm. long,  $1-1\frac{1}{2}$  cm. wide.

On very rotten wood. Jamaica. December. Probably rare.

*P. inflata* is so loosely attached to the substratum that careful handling is necessary to prevent fructifications from becoming detached from the wood during examination. The pair of moniliform inflations on short lateral branches of hyphae of the hyphal layer shows distinctly in sectional preparation and promises to be as helpful a character in the recognition of this species as the details of hyphal structure in *Stereum purpureum*, *Corticium investiens*, *Grandinia granulosa*, and others.

Specimens examined:

Jamaica: Hope Gardens, W. A. Murrill, 4, type, comm. by N. Y. Bot. Gard. Herb.

48. *P. Sheari* Burt, n. sp.

Type: in Burt Herb.

Fructification effused, rather thick, membranaceous, drying pinkish buff, somewhat tubercular, somewhat velvety, not waxy, the margin becoming somewhat free and curling up in drying, separable from the substratum when moistened; in section 800-1000  $\mu$  thick, not colored, 2-layered, the layer next to the substratum up to 800-900  $\mu$  broad and composed of densely interwoven, hyaline hyphae not incrustated, not nodose-septate, thick-walled, 3  $\mu$  in diameter, the hymenial layer 100-150  $\mu$  broad, containing throughout great numbers of slender, rough-walled or minutely incrustated cystidia  $30-45 \times 4-6 \mu$ ; no gloeocystidia; basidia with 4 sterigmata; spores hyaline, even,  $10-12 \times 6-7 \mu$ .

Fructifications 3 mm.-2 cm. in diameter.

On dead *Alnus*. Blue Mt., Oregon. August. Probably rare and local.

The fructifications apparently originate as outgrowths from lenticels in the bark and spread laterally over more or less circular areas and become confluent. The occurrence on *Alnus*, tuber-

cular surface, numerous and small cystidia confined to the hymenial layer, and spores  $12 \times 6 \mu$  form a distinctive group of characters.

Specimens examined:

Oregon: Blue Mt., *C. L. Shear*, 797, type.

49. *P. Ravenelii* Cooke, *Grevillea* 8: 21. *pl. 124, f. 12.* 1879; *Sacc. Syll. Fung.* 6: 643. 1888; *Massee, Linn. Soc. Bot. Jour.* 25: 150. 1889.

Type: in Kew Herb.

Fructifications broadly effused, adnate, thin, small pieces separable when moistened, becoming pale pinkish buff to pinkish buff in the herbarium, and somewhat cracked, the margin thinning out; in section  $100\text{--}300 \mu$  thick, not colored, composed of erect and densely interwoven hyaline hyphae and very numerous cystidia in all regions of the fructifications and having a somewhat layered arrangement in thick specimens; no gloeocystidia; cystidia heavily and coarsely incrusted, conical, with apex obtuse or barely acute,  $30\text{--}40 \times 12\text{--}18 \mu$  when deeply immersed, or  $30 \times 8\text{--}10 \mu$  in the hymenium; spores white in a spore collection, even,  $4\text{--}5 \times 2\text{--}3 \mu$ .

Fructifications 2–8 cm. long, 1–3 cm. wide.

On bark and wood of decaying logs of *Quercus* and other frondose species. District of Columbia to Mexico, in the Island of Guam, and in Japan. July to January. Frequent.

*P. Ravenelii* is distinguished by its small spores, coarsely incrusted, short cystidia with broad base, and absence of gloeocystidia. *P. Roumeguerii* is similar in aspect but becomes much thicker and has longer, slenderer, and more taper-pointed cystidia and is more distinctly layered.

Specimens examined:

Exsiccati: *Ravenel, Fungi Am.*, 720, under the name *Corticium laeve*; *Ravenel, Fungi Car.* 2: 39, under the name *Corticium laeve*.

District of Columbia: Takoma Park, *C. L. Shear*, 1345.

South Carolina: *H. W. Ravenel*, type (in Kew Herb.), and in *Ravenel, Fungi Car.* 2: 39.

Georgia: Darien, *H. W. Ravenel*, in *Ravenel, Fungi Am.*, 720;

- Tallulah Falls, *A. B. Seymour*, comm. by *W. G. Farlow*, 13 (in *Mo. Bot. Gard. Herb.*, 44597).
- Florida: Brooksville Hammock, *W. A. Merrill*, 166, comm. by *N. Y. Bot. Gard. Herb.* (in *Mo. Bot. Gard. Herb.*, 62115); Cocanut Grove, *R. Thaxter*, 96 (in *Farlow Herb.*, and *Mo. Bot. Gard. Herb.*, 43924); Daytona, *R. A. Harper*, 7 (in *Mo. Bot. Gard. Herb.*, 54539); New Smyrna, *W. A. Merrill*, 6, comm. by *N. Y. Bot. Gard. Herb.*, 62087.
- Alabama: Auburn, *F. S. Earle & C. F. Baker* (in *N. Y. Bot. Gard. Herb.*, and *Mo. Bot. Gard. Herb.*, 61345).
- Louisiana: Bogalusa, *C. J. Humphrey*, 5495 (in *Mo. Bot. Gard. Herb.*, 13882); St. Martinville, *A. B. Langlois*, 2689, 2693 (in *N. Y. Bot. Gard. Herb.*, and *Mo. Bot. Gard. Herb.*, 61457, 61436), and 2692, *ar*, *as*, *bp*, *bs*, *ci*, and *co*.
- Mexico: Orizaba, *W. A. & E. L. Merrill*, 765, comm. by *N. Y. Bot. Gard. Herb.*, 54647.
- Island of Guam: *Edwards*, comm. by *J. R. Weir*, 10775 (in *Mo. Bot. Gard. Herb.*, 56239).
- Japan: Prov. Awaji, Mt. Mikuma, *A. Yasuda*, 39, 56, 79 (in *Mo. Bot. Gard. Herb.*, 56156, 56159, 56313).

+ 50. *P. Roumeguerii* Bresadola in litt., n. comb.  
*Corticium Roumeguerii* Bresadola, *Fungi Trid.* 2: 36. pl. 144, f. 1. 1892; Roumeguère, *Rèv. Myc.* 15: 31 pag. sep. pl. 136, f. 13 b. 1893; *Sacc. Syll. Fung.* 11: 125. 1895.—*Kneiffia Roumeguerii* Bresadola, *Ann. Myc.* 1: 102. 1903.—*Corticium Mollerianum* Bresadola in *Saccardo*, *Soc. Brot. Bol.* 11: 13. 1892.—*Peniophora Molleriana* (Bres.) *Saccardo*, *Soc. Brot. Bol.* 11: 13. 1892; *Sacc. Syll. Fung.* 11: 128. 1895; v. Höhnelt & Litschauer, *K. Akad. Wiss. Wien Sitzungsber.* 117: 1092. 1908; Bourdot & Galzin, *Soc. Myc. Fr. Bul.* 28: 401. 1913; Wakefield, *Brit. Myc. Soc. Trans.* 5: 132. 1915; Rea, *Brit. Basid.* 693. 1922.

Type: type distribution in Roumeguere, *Fungi Gallici*, 506.

Fructifications broadly effused, adnate, becoming rather thick, small pieces separable when moistened, whitish at first, becoming pale pinkish buff to pinkish buff in the herbarium, the margin thinning out; in section 100–700  $\mu$  thick, not colored, becoming

layered in thick specimens, composed of erect and interwoven, closely agglutinate hyphae  $2-3\ \mu$  in diameter and of very numerous cystidia; no gloecystidia; cystidia incrusting,  $35-80 \times 8-12\ \mu$ , acute, numerous in all layers except next to the substratum; spores hyaline, even,  $4-6 \times 2-3\ \mu$ .

Fructifications 3-8 cm. long, 1-4 cm. wide.

On bark of logs of *Quercus*, *Eucalyptus*, *Citrus*, *Ficus*, and other frondose species, rarely on conifers. In Europe, and in Alabama, Louisiana, Missouri, Idaho, British Columbia to California, and in the West Indies. May to February. Not common.

*P. Roumeguerii* is possibly a synonym of *P. Ravenelii*, as I formerly regarded it, but the numerous specimens which have been studied lead me to believe that while of the same aspect, spore characters, and substratum, *P. Roumeguerii* eventually becomes twice as thick as *P. Ravenelii*, more closely agglutinate, and its cystidia longer and slenderer in proportion to their thickness. The error of v. Höhnelt & Litschauer, *loc. cit.*, in misstating the year of publication of *P. Molleriana* as 1891 has probably led more recent European authors into reducing *P. Roumeguerii* to synonymy while it really has priority.

Specimens examined:

Locality not stated: *G. Bresadola*, authentic specimen under the name *Peniophora Roumeguerii* Bres.

Italy: Trient, *G. Bresadola*, authentic specimen of *Peniophora Molleriana*.

France: Aveyron, *A. Galzin*, 17908, comm. by H. Bourdot, 16898.

England: Symond's Yat, *E. M. Wakefield* (in Mo. Bot. Gard. Herb., 44759).

Alabama: Montgomery County, *R. P. Burke*, 364 (in Mo. Bot. Gard. Herb., 57232).

Louisiana: Baton Rouge, *Edgerton & Humphrey*, comm. by C. J. Humphrey, 5646, 5648; St. Martinville, *A. B. Langlois*, 1346, comm. by W. G. Farlow, 2675, 2683, 2970, cj, ck, and another specimen, comm. by Lloyd Herb., 3042.

Missouri: Creve Coeur Lake, *L. O. Overholts*, 3165 (in Mo. Bot. Gard. Herb., 5709).

Idaho: Santa, *E. E. Hubert*, comm. by J. R. Weir, 12001 (in Mo. Bot. Gard. Herb., 63363).

British Columbia: Sidney, *J. Macoun*, 379 (in Mo. Bot. Gard. Herb., 55330).

Oregon: Tidewater, *S. M. Zeller*, 1983 (in Mo. Bot. Gard. Herb., 58760).

California: Berkeley, *C. J. Humphrey*, 5987, 5990; Redding, *C. J. Humphrey*, 6038; Santa Barbara, *O. M. Oleson*, 10.

Cuba: *Horne* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61464).

Porto Rico: Rio Piedras, *J. A. Stevenson*, 5792 (in Mo. Bot. Gard. Herb., 54693); Sabana Llana, *J. A. Stevenson*, 6058 (in Mo. Bot. Gard. Herb., 54686); Vega Baja, *J. A. Stevenson*, 5693 (in Mo. Bot. Gard. Herb., 54692).

51. *P. hiulca* Burt, n. sp.

Type: in Burt Herb. and probably in N. Y. Bot. Gard. Herb.

Fructifications long and widely effused, thick, membranaceous, separable when moistened, becoming light buff to warm buff in the herbarium, widely cracked, the margin determinate, somewhat tomentose; in section 250–1400  $\mu$  thick, not colored, 2-layered, with a very thick layer next to the substratum of densely interwoven, longitudinally arranged and somewhat ascending thin-walled, hyaline hyphae 3–4  $\mu$  in diameter, not incrustated, not nodose-septate and with the hymenial layer thinner—only 100–200  $\mu$  thick—and containing in all portions very numerous cystidia; no gloeocystidia; cystidia incrustated, somewhat conical, 30–50  $\times$  6–12  $\mu$ , very numerous, wholly immersed or protruding up to 30  $\mu$ ; basidia with 4 sterigmata; spores hyaline, even, 4½–5  $\times$  3  $\mu$ .

Fructifications 4–12 cm. long, 2–4 cm. wide—perhaps larger for all specimens received are fragmentary.

On bark and decaying wood of frondose species. Mexico and the West Indies. November to May.

*P. hiulca* has large, conspicuous fructifications with somewhat the color and aspect of *P. mutata* and *P. Roumeguerii*. The absence of gloeocystidia and the smaller spores distinguish it from the former, and the comparatively thin hymenial layer to which cystidia are restricted and the very thick layer of interwoven hyphae running in all directions, rather than predominantly erect, from *P. Roumeguerii*.

## Specimens examined:

Mexico: Jalapa, W. A. & E. L. Merrill, 192, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54549).

Bermuda: S. Brown, N. L. Britton & F. J. Seaver, 1507, comm. by N. Y. Bot. Gard. Herb.

Jamaica: Castleton Gardens, W. A. & E. L. Merrill, 71, type, comm. by N. Y. Bot. Gard. Herb.; Mandeville, A. E. Wight, comm. by W. G. Farlow.

**52. *P. phosphorescens* Burt, n. sp.**

Type: in Burt Herb. and probably in Farlow Herb.

Fructifications effused, membranaceous, separable, becoming clay-color to avellaneous in the herbarium, and widely cracked into rectangular portions about 5 mm. in diameter, which curl up somewhat from the substratum along the fissures and show the whitish, cottony subiculum, the hymenium waxy, somewhat tubercular and minutely spotted in the type, the margin thinning out; in section 300–500  $\mu$  thick, not colored, 2-layered, with the layer next to the substratum composed of loosely interwoven hyphae 3–3½  $\mu$  in diameter, the hymenial layer up to 200  $\mu$  thick, composed of densely arranged hyphae and cystidia; no gloeocystidia; cystidia incrusted, 70–100  $\times$  12–18  $\mu$ , fusiform, acute, sometimes tilted, immersed throughout the hymenial layer, few protruding; spores hyaline, even, subglobose, 4–5  $\times$  3–3½  $\mu$ ; said to be phosphorescent when collected.

Fructifications probably large, for collections consist of fragments 7  $\times$  1½ cm., and 1½–3 cm. in diameter.

On rotten wood of fence post and decaying bark of frondose species. Jamaica. October to December.

*P. phosphorescens* may be recognized by the thick, clay-colored fructifications which contract in drying so as to crack into rectangular masses about 5 mm. in diameter, separated from one another by rather wide fissures. The thick, hymenial portion of each mass is so weakly attached to the substratum by the loose subiculum that these masses curl upward along their edges and may occasionally become wholly detached. The cystidia are suggestive of those of *P. flavido-alba* but all other characters of these two species are different. Phosphorescence has been recorded for but few fungi.

## Specimens examined:

Jamaica: *A. E. Wight*, type, comm. by W. G. Farlow; Castleton Gardens, *F. S. Earle*, 240, comm. by N. Y. Bot. Gard. Herb.

53. *P. sanguinea* (Fr.) Bresadola in v. Höhnelt & Litschauer, K. Akad. Wiss. Wien Sitzungsber. **115**: 1588, 1589. 1906; Bourdot & Galzin, Soc. Myc. Fr. Bul. **28**: 395. 1913; Rea, Brit. Basid. 690. 1922.

*Thelephora sanguinea* Fries, Elenchus Fung. **1**: 203. 1828.—*Corticium sanguineum* Fries, Epicr. 561. 1838; Hym. Eur. 650. 1874; Icones Hym. **2**: 97. *pl.* 198, *f.* 2. 1877; Sacc. Syll. Fung. **6**: 612. 1888; Wakefield, Brit. Myc. Soc. Trans. **4**: 119. *pl.* 3, *f.* 18–20. 1913.—*Kneiffia sanguinea* (Fries) Bresadola, Ann. Myc. **1**: 101. 1903.—*Corticium glabrum* Berkeley & Curtis, Grevillea **1**: 178. 1873; Sacc. Syll. Fung. **6**: 620. 1888; Masee, Linn. Soc. Bot. Jour. **27**: 142. 1890.—(In part) *Corticium Petersii* Berkeley & Curtis, Grevillea **1**: 177. 1873.

Fructification effused, somewhat membranaceous, tender, dragon's-blood red, substance arachnoid, the margin byssoid or fibrillose and often connected with mycelial strands of blood-red color which stain the wood red, hymenium drying light buff and pinkish buff to buff-pink; in section 200–500  $\mu$  thick, not colored, with the hyphae loosely arranged, 3–6  $\mu$  in diameter, and with some granule-incrusted, rarely nodose-septate; cystidia hair-like, not incrusted usually, about  $4\frac{1}{2}$   $\mu$  in diameter, protruding 20–30  $\mu$ ; spores white in spore collection, even,  $4-5 \times 2-2\frac{1}{2}$   $\mu$ .

Fructifications 2–10 cm. long, 1–4 cm. wide.

On dead wood and fallen branches especially of conifers. Europe, New Hampshire to Louisiana, and in Oregon. July to January. Infrequent.

*P. sanguinea* and *P. miniata* may be recognized by the blood-red color of the young fructifications, the more or less numerous red mycelial strands, and the wood stained red. Later in fertile stage the hymenium tends toward a buff color with a tinge of red. In section *P. sanguinea* shows granule-incrusted hyphae more or less numerous among other even-walled hyphae, while *P. miniata* contains no incrusted hyphae.

Specimens examined:

Exsiccati: Ell. & Ev., Fungi Col., 1020, under the name *Corticium radiosum*.

Sweden: L. Romell, 130; Stockholm, L. Romell, 136.

Austria: Tirol, V. Litschauer.

France: F. Fautrey, from Lloyd Herb., 3308.

New Hampshire: Chocorua, W. G. Farlow, 10, E. A. Burt, 3, 4.

New York: Hudson Falls, S. H. Burnham, 21 (in Mo. Bot. Gard. Herb., 54490); Karner, H. D. House, 14.157 (in Mo. Bot. Gard. Herb., 44704); Oneida, H. D. House (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 57434); Wymantskill, C. H. Peck (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 56051).

New Jersey: Newfield, J. B. Ellis, in Ell. & Ev., Fungi Col., 1020.

Pennsylvania: State College, L. O. Overholts, 3422 (in Mo. Bot. Gard. Herb., 54476).

South Carolina: Society Hill, types of *Corticium glabrum*, Curtis Herb., 2404 (in Curtis Herb.) and 3719 (in Kew Herb.).

Florida: W. W. Calkins, 845 (in Burt Herb., Farlow Herb., and Mo. Bot. Gard. Herb., 63421).

Alabama: Peters, 847, under the name *Corticium miniatum* (in Curtis Herb., 5225), and Peters, 473, one of the types of *Corticium Petersii* (in Curtis Herb., 4509).

Louisiana: St. Martinville, A. B. Langlois, 2704.

Oregon: Corvallis, S. M. Zeller, 1860 (in Mo. Bot. Gard. Herb., 56868).

**54. *P. limonia* Burt, n. sp.**

Type: in Mo. Bot. Gard. Herb.

Fructifications broadly effused, compact, fleshy-membranaceous, small pieces separable when moistened, cream-buff, not cracked, the margin byssoid and with some radiating, cream-buff mycelial strands; in section 200  $\mu$  thick, not perceptibly colored, 2-layered next to the substratum, with very coarse, heavily incrustated, loosely arranged, longitudinally interwoven hyphae 6–9  $\mu$  in diameter, and with the hymenial layer 75  $\mu$  thick and composed of erect tissues; no gloeocystidia; cystidia not incrustated,  $45 \times 4\frac{1}{2}$   $\mu$ , tapering to a sharp apex, protruding 20–27  $\mu$  beyond the basidia; spores hyaline, even,  $3\text{--}4 \times 2\frac{1}{2}$   $\mu$ .

Fructifications  $2\frac{1}{2}$ –4 cm. long,  $1-1\frac{1}{2}$  cm. wide.

On bark of decaying *Robinia neo-mexicana*. New Mexico. August.

*P. limonia* has the color of *P. sulphurina* and *P. carnosa* but differs from both by its occurrence on frondose bark and very coarse, heavily incrustated hyphae. The hymenial layer does not crack and flake away from the substratum like that of *P. sulphurina*. Treatment of sections with potassium hydrate solution causes no color changes.

Specimens examined:

New Mexico: Sulphur Canyon, *W. H. Long*, 21405, type (in Mo. Bot. Gard. Herb., 55146).

55. *P. amoena* Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructifications long and broadly effused, thin, adnate, small pieces separable when moistened, cream-color in the herbarium, even, glabrous, the margin thinning out, of finely interwoven hyphae; in section  $120\ \mu$  thick, not colored, with the hyphae near the substratum compactly interwoven, about  $3\ \mu$  in diameter; an incrustated subhymenial zone present, formed of numerous incrustated bodies side by side; no gloecystidia; cystidia of the hymenial surface not incrustated,  $7-9\ \mu$  in diameter, protruding up to  $45\ \mu$ ; basidia rather large,  $25-30 \times 5-6\ \mu$ , with 4 sterigmata; spores hyaline, even,  $12-15 \times 4-6\ \mu$ , copious.

Fructifications probably large, for pieces broken off at one end and one side are 5–6 cm. long,  $1\frac{1}{2}$ –2 cm. wide.

On a soft wood of a frondose species. British Columbia.

*P. amoena* forms cream-colored, somewhat waxy fructifications on decorticated logs of a pale soft wood—perhaps *Populus*. The spores are so large as to afford a valuable specific character.

Specimens examined:

British Columbia: Sidney, *J. Macoun*, 7, type (in Mo. Bot. Gard. Herb., 5766).

56. *P. firma* Burt, n. sp.

Type: in Burt Herb.

Fructifications effused, rather thick, dry, firm, membranaceous,

small pieces separable when moistened, cream-buff in the herbarium, even, not cracked, the margin thinning out, fibrillose; in section 300–500  $\mu$  thick, not colored, with the hyphae 4–6  $\mu$  in diameter near the substratum, densely interwoven, ascending and becoming finer, sometimes incrustated towards the hymenial layer; no gloeocystidia; cystidia not incrustated, tapering upward to a sharp point, 4–5  $\mu$  at base, protruding 20–35  $\mu$ , confined to surface of hymenium, numerous; spores hyaline, even,  $4-5 \times 2\frac{1}{2}-3 \mu$ .

Fructifications 2–5 cm. long in pieces broken off at both ends, 3–5 cm. wide.

On rotten wood of *Alnus* (?) and on bark of *Robinia neomexicana*. Washington and Arizona. September and October.

*P. firma* resembles *P. Roumeguerii* in general aspect but its cystidia are slenderer than those of *P. Roumeguerii*, not incrustated, and present in the hymenial surface only.

Specimens examined:

Washington: Arlington, C. J. Humphrey, 7609, type.

Arizona: Santa Catalina Mountains, Coronado National Forest, G. G. Hedgcock & W. H. Long, comm. by C. J. Humphrey, 2555 (in Mo. Bot. Gard. Herb., 12262).

**57. *P. miniata* (Berk.) Burt, n. comb.**

*Thelephora miniata* Berkeley in Hooker, Eng. Flora 2<sup>2</sup>: 168. 1836; Brit. Fungi, No. 251. 1843. See v. Höhnelt & Litschauer, K. Akad. Wiss. Wien Sitzungsber. 115: 1588. 1906.

Type: authentic specimen in Berkeley, Brit. Fungi, 251.

Fructification effused, somewhat membranaceous, tender, English red, substance arachnoid, the margin byssoid or fibrillose and often connected with mycelial strands of blood-red color; hymenium drying pinkish buff to buff-pink and cinnamon-rufous; in section 150–300  $\mu$  thick, not colored, the hyphae loosely arranged, 3–6  $\mu$  in diameter, not incrustated, rarely nodose-septate; cystidia few, hair-like, not incrustated,  $3\frac{1}{2}-4\frac{1}{2} \mu$  in diameter, protruding 20–30  $\mu$ ; spores hyaline, even,  $4-4\frac{1}{2} \times 2-2\frac{1}{2} \mu$ .

Fructifications 2–10 cm. long,  $1-2\frac{1}{2}$  cm. broad.

On fallen limbs, usually of conifers. In England, New Hampshire to Louisiana, and in Washington and Oregon. July to December. Infrequent.

The twenty gatherings cited below have been separated from *P. sanguinea* by the absence of incrustated hyphae in their sectional preparations. In the original description of *T. miniata*, Berkeley stated, "This most elegant species differs so much from *T. sanguinea* Fr., in being most highly colored where exposed to light, while in the portions to which light has not free access it is nearly white, and in not tinging the wood whereon it grows with its own color, that an inspection of specimens renders it almost impossible to consider it the same." Fifteen of the twenty specimens referred below to *P. miniata* on account of absence of hyphal incrustation have the hymenium red and only five pinkish buff, while none of the twenty specimens show the wood stained red.

Specimens examined:

Exsiccati: Berkeley, Brit. Fungi, 251, authentic specimen of *Thelephora miniata* Berk.

England: Berkeley, Brit. Fungi, 251.

New Hampshire: Chocorua, *E. A. Burt*, 1, 2.

New York: Albany, *H. D. House* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 14830, 55201), and *H. D. House & J. Rubinger* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 17797); Karner, *H. D. House*, comm. by N. Y. State Mus. Herb. (in Mo. Bot. Gard. Herb., 54347, 54357, 54377); Newtonville, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55969, 55989); North Elba, *C. H. Kauffman*, 5 (in Mo. Bot. Gard. Herb., 6719); Schuylerville, *C. H. Peck*, comm. by N. Y. State Mus. Herb., T 17, T 25 (in Mo. Bot. Gard. Herb., 54570, 54657).

Georgia: Tallulah Falls, *A. B. Seymour*, from Farlow Herb., D (in Mo. Bot. Gard. Herb., 44609).

Louisiana: St. Martinville, *A. B. Langlois*, bu.

Washington: Chehalis, *C. J. Humphrey*, 6273; Hoquiam, *C. J. Humphrey*, 6409.

Oregon: Granite Pass, *J. R. Weir*, 11183 (in Mo. Bot. Gard. Herb., 63252).

○ 58. *P. Burtii* Romell, n. sp.

Type: in Burt Herb. and Romell Herb.

Fructifications effused, somewhat membranaceous, tender, hymenium drying warm buff usually but sometimes whitish to cartridge-buff, sometimes cracked and showing the cottony substance, the margin byssoid or fibrillose and sometimes connected with antimony-yellow mycelial strands; in section 200–300  $\mu$  thick, not colored, with the hyphae loosely arranged, hyaline, rarely nodose-septate, with some incrusting granules in the sub-hymenium; cystidia hair-like, not incrustated, tapering, 3–4  $\mu$  in diameter, protruding up to 25  $\mu$ , not numerous; spores hyaline, even,  $4-4\frac{1}{2} \times 2-2\frac{1}{2} \mu$ .

Fructifications 2–7 cm. long, 1–2 cm. broad.

On wood and fallen limbs of frondose species in woods. Vermont to Louisiana and in Ohio, Michigan, and Montana. July to October. Rare.

This species is noteworthy by the antimony-yellow or ochraceous mycelial strands or cords which grow from under the bark and connect with the fructifications. The presence of cystidia separates this species from *Corticium sulphureum* which has yellower fructifications and not as large mycelial cords when present.

Specimens examined:

✕ Exsiccati: Ellis, N. Am. Fungi, 933, under the name *Corticium radiosum*.

Vermont: Middlebury, E. A. Burt.

Massachusetts: Sharon, A. P. D. Piguet, 136, comm. by Farlow Herb. (in Mo. Bot. Gard. Herb., 59627).

New York: Ithaca, H. H. Whetzel, comm. by Cornell Univ. Herb., 13760.

New Jersey: Newfield, J. B. Ellis, in Ellis, N. Am. Fungi, 933.

Virginia: Crabbottom, W. A. Merrill, 239 (in N. Y. Bot. Gard. Herb., Burt Herb., and Mo. Bot. Gard. Herb., 61560).

Alabama: Auburn, Alabama Biological Survey.

Louisiana: Bogalusa, C. J. Humphrey, 5472; St. Martinville, A. B. Langlois, cl.

West Virginia: Paw Paw, C. L. Shear, 1179.

Ohio: C. G. Lloyd, 3823, type.

Michigan: New Richmond, C. H. Kauffman, 34 (in Mo. Bot. Gard. Herb., 23060).

Montana: Evaro, *J. R. Weir*, 415 (in Mo. Bot. Gard. Herb., 14772).

59. *P. subapiculata* (Bres.) Burt, n. comb.

*Corticium subapiculatum* Bresadola, *Mycologia* 17: 69. 1925.

Type: in Weir Herb.

Fructifications broadly effused, adnate, small pieces separable when moistened, waxy, becoming ivory-yellow to pinkish buff in the herbarium, even, only rarely cracked, the margin thinning out, pruinose; in section about 150  $\mu$  thick, not colored, composed of interwoven hyaline hyphae  $3\frac{1}{2}$ – $4\frac{1}{2}$   $\mu$  in diameter, not incrustated, only rarely nodose-septate; no gloeocystidia; cystidia hair-like, not incrustated, cylindric, obtuse,  $3$ – $4\frac{1}{2}$   $\mu$  in diameter, protruding 10–40  $\mu$  beyond the basidia; spores hyaline, even,  $4$ – $6 \times 2$ – $3$   $\mu$ .

Fructifications 8–12 cm. long, 1–4 cm. wide.

On decaying logs of *Pinus*, *Abies*, and *Larix*—usually on the wood. Idaho and British Columbia. June to September.

*P. subapiculata* resembles *P. Weiri* in color and general aspect but has no gloeocystidia and smaller cystidia and spores.

Specimens examined:

Montana: Evaro, *J. R. Weir*, 414 (in Mo. Bot. Gard. Herb., 63720); Kalispell, *E. E. Hubert*, comm. by *J. R. Weir*, 11957 (in Mo. Bot. Gard. Herb., 63312).

Idaho: Clarkia, *A. S. Rhoades* (in Weir Herb., 16928, type); Coolin, *J. R. Weir*, 11086 (in Mo. Bot. Gard. Herb., 63245); Priest River, *J. R. Weir*, 52, 130 (in Mo. Bot. Gard. Herb., 63718), and *E. E. Hubert*, comm. by *J. R. Weir*, 12020 (in Mo. Bot. Gard. Herb., 63375).

British Columbia: Kootenai Mountains, near Salmo, *J. R. Weir*, 476 (in Mo. Bot. Gard. Herb., 63719).

60. *P. sordida* (Karst.) Burt—not in the sense of Brinkmann or Bresadola.

*Corticium sordidum* Karsten, Soc. pro Fauna et Flora Fennica Meddel. 9: 65. 1883; Finska Vet.-Soc. Bidrag Natur och Folk 48: 413. 1889; Sacc. Syll. Fung. 6: 631. 1888; Massee, Linn. Soc. Bot. Jour. 27: 140. 1890. Compare v. Höhnelt

& Litschauer, K. Akad. Wiss. Wien Sitzungsber. 117: 1088. 1908.

Type: authentic specimen in Burt Herb.

Fructifications longitudinally effused, small portions separable when moistened, in the herbarium young specimen pale olive-buff and older specimen wood-brown, contracting in drying and cracking into small rectangular masses about 1 mm. in diameter, separated by rather wide crevices and showing the paler floccose subiculum, the margin thinning out; in section 150–300  $\mu$  thick, not colored, becoming stratose, each stratum 2-layered, with the layer towards the substratum composed of loosely arranged, suberect, branching hyphae  $4\frac{1}{2}$ –5  $\mu$ , rarely 6  $\mu$ , in diameter, not incrusted, not nodose-septate, and the hymenial layer compact, 75  $\mu$  thick; no gloeocystidia; cystidia not incrusted, cylindric, obtuse, 4–6  $\mu$  in diameter, protruding up to 30  $\mu$ , none wholly immersed; spores copious, hyaline, even,  $4\frac{1}{2}$ –6  $\times$  2–3  $\mu$ .

Fructifications 3 cm.  $\times$  7 mm. and  $2\frac{1}{2}$   $\times$  1 cm. in the two fragmentary pieces from Karsten, 3–10 cm. long, 7–15 mm. wide in an American specimen.

On decorticated wood of *P. sylvestris* and *P. Strobis* on the ground. Finland and New York. October. Rare.

Brinkmann distributed in his "Westfälische Pilze," 8, under the name of *Peniophora sordida* (Karst.) Brinkmann, a specimen which was later referred by Bresadola to *Peniophora serialis*. I have not seen this specimen. Von Höhnelt & Litschauer accepted this reference, *loc. cit.*, and placed *Corticium sordidum* Karst. as a synonym of *P. serialis*. The study of other specimens of the *P. serialis* complex shows that none of these others have the structure of authentic *Corticium sordidum* although somewhat resembling the old stage in general aspect. The problem with me for a time was whether *P. cremea* is distinct from *P. sordida*, but *P. cremea* occurs on frondose wood, is not cracked into rectangular, completely separated masses, and has larger cystidia, some of which are incrusted and wholly immersed. The Karsten specimens of *C. sordidum* are in some places composed of a single stratum 150  $\mu$  thick of 2 layers and in others of 2 strata with thickness together of 240–300  $\mu$ .

Specimens examined:

Finland: Mustiala, *P. A. Karsten*, authentic specimen of *Corticium sordidum*.

New York: Karner, *H. D. House*, 14.188 (in Mo. Bot. Gard. Herb., 44722).

**61. *P. Burkei* Burt, n. sp.**

Type: in Mo. Bot. Gard. Herb.

Fructifications broadly effused, thin, adnate, membranaceous, tender, small pieces separable when moistened, cream-buff in the herbarium, somewhat tubercular, conforming to the inequalities of the rough bark upon which growing, somewhat cracked in drying, the margin thinning out, of finely interwoven hyphae; in section 120–180  $\mu$  thick, not colored, with the hyphae suberect, loosely interwoven, thin-walled, 3  $\mu$  in diameter, nodose-septate, not incrustated; no gloeocystidia; cystidia not incrustated, subulate,  $50 \times 4\frac{1}{2}$ –5  $\mu$ , protruding up to 20  $\mu$ ; spores hyaline, even,  $6$ – $7 \times 4$ –5  $\mu$ , copious.

Fructifications probably large—4 cm. long, 2–2½ cm. wide in pieces broken off at both ends and on one side.

On rough, frondose bark. Alabama. October.

*P. Burkei* has some resemblance in aspect to *P. cremea* but has a more tubercular hymenium, slenderer and more erect hyphae, and larger spores.

Specimens examined:

Alabama: Montgomery County, *R. P. Burke*, 474, type (in Mo. Bot. Gard. Herb., 57292).

+ ○ **62. *P. glebulosa* Bresadola, Fungi Trid. 2: 61. pl. 170, f. 2. 1898; Sacc. Syll. Fung. 16: 195. 1902; Bourdot & Galzin, Soc. Myc. Fr. Bul. 28: 384. 1913; Rea, Brit. Basid. 688. 1922.**

Not *Thelephora calcea* Fries var. *glebulosa* Fries, Elenchus Fung. 1: 215. 1828.—Not *Corticium calceum* Fries, Epier. 562. 1838; nor Hym. Eur. 652. 1874.

Type: in Bresadola Herb. and Burt Herb.

Fructifications widely effused, thin, closely adnate, whitish, pinkish buff, pale olive-buff, or cream color, pubescent with the cystidia, becoming cracked into small areas when dry, the margin thinning out; in section 50–200  $\mu$  thick, not colored, composed throughout of cystidia and rather erect, interwoven, hyaline,

thin-walled hyphae 1–3  $\mu$  in diameter, not incrusted; cystidia thick-walled, with very narrow lumen which is often much larger at apex of cystidium, even where immersed, or sometimes with some granular incrustation near protruding apex, 60–150  $\times$  7–10  $\mu$ , protruding up to 50–100  $\mu$ , very numerous throughout the fructification, not dissolved by treatment of sections with potassium hydrate; spores white, even, cylindric, slightly curved, 6–9  $\times$  1½–2  $\mu$ .

Fructifications 3–15 cm. long, 1–6 cm. wide.

On wood of decaying conifers, rarely on bark, and on frondose species. In Europe, from Canada to New Jersey, in Nebraska, Colorado, Montana and Manitoba to British Columbia and Oregon. May to November. Common locally.

*P. glebulosa* has distinctive cystidia to which Bourdot & Galzin have given the term cystidioles. These cystidia are elongated, cylindric, even throughout their whole length usually, but sometimes with a little incrusting matter near the apex of the protruding part, and with a very thick wall—so thick that the axial lumen containing protoplasmic contents is merely a line which, however, is often greatly expanded at its peripheral end in the apex of the cystidium where the latter becomes thin-walled and fragile. The cystidia of *P. glebulosa* are not at all dissolved or only partially by the potassium hydrate treatment to which sections are subjected. In the original description Bresadola states that *P. glebulosa* is the same as authentic *Corticium calceum* var. *glebulosum* Fries. I believe this to be an error, for a fragment of authentic *C. calceum* var. *glebulosum* communicated to me by Bresadola and the original specimens so labelled in Fries Herbarium, all of which I studied, have no cystidia whatever and agree in all respects with a true *Corticium* collected at Femsjö, the original station, by Romell and myself.

Specimens examined:

Sweden: Femsjö, Romell & Burt, three gatherings; Lappland, L. Romell, 405; Stockholm, L. Romell, 199.

Austria: Stubai, Tirol, V. Litschauer.

Italy: Trient, G. Bresadola, type.

England: Symond's Yat, E. M. Wakefield (in Mo. Bot. Gard. Herb., 57120).

Canada: Billings Bridge, *J. Macoun*, 113.

Quebec: Hull, *J. Macoun*, 246.

Maine: *W. A. Murrill*, 2139½ (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61424); Kittery Point, *R. Thaxter & E. A. Burt*; Piscataquis County, *W. A. Murrill*, 2142, 2653 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61349, 61441).

New Hampshire: Chocorua, *W. G. Farlow* (in Mo. Bot. Gard. Herb., 19554) and 11.

Vermont: Middlebury, *E. A. Burt*, four gatherings.

New York: Altamont, *E. A. Burt*; East Galway, *E. A. Burt*, three gatherings; Farmington, *E. Brown*, 116 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61451); Ithaca, *G. F. Atkinson*, 8236, 8284; Sandlake, *C. H. Peck*, comm. by N. Y. State Mus. Herb., T 15 (in Mo. Bot. Gard. Herb., 54568).

New Jersey: Newfield, *J. B. Ellis*, under the herbarium name *P. gracillima* (in N. Y. Bot. Gard. Herb., and Burt Herb.).

Nebraska: Long Pine, *C. L. Shear*, 1056.

Colorado: Geneva Creek Canyon, alt. 8000–14000 ft., *F. J. Seaver & E. Bethel* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61467); Golden, *L. O. Overholts*, 1752 (in Mo. Bot. Gard. Herb., 54881).

Montana: Bernice, *J. R. Weir*, 12000, 12006 (in Mo. Bot. Gard. Herb., 63362, 63366); Darby, *E. E. Hubert*, comm. by J. R. Weir (in Mo. Bot. Gard. Herb., 63248); Hecla, *E. E. Hubert*, comm. by J. R. Weir, 11416 (in Mo. Bot. Gard. Herb., 63263); Libby, *E. E. Hubert*, comm. by J. R. Weir, 11443 (in Mo. Bot. Gard. Herb., 63273).

Idaho: Coeur d'Alene, *J. R. Weir*, 11974, and *E. E. Hubert*, comm. by J. R. Weir, 11991 (both in Mo. Bot. Gard. Herb., 63328 and 63354 respectively); Coolin, *J. R. Weir*, 11562 (in Mo. Bot. Gard. Herb., 63301); Priest River, *E. E. Hubert*, comm. by J. R. Weir, 12029 (in Mo. Bot. Gard. Herb., 63381), and *J. R. Weir*, 350, 6362 (in Mo. Bot. Gard. Herb., 7853, 55952) and 54.

Manitoba: Norway House, *G. R. Bisby*, 1458, 1464, 1476 (in Mo. Bot. Gard. Herb., 61640, 61646, 61658).

British Columbia: Agassiz, *J. R. Weir*, 364 (in Mo. Bot. Gard. Herb., 16407); Comax, *J. Macoun*, 622 (in Mo. Bot. Gard. Herb., 55333); Kootenai Mts., Salmo, *J. R. Weir*, 485, 538 (in Mo. Bot. Gard. Herb., 17619, 1738); Sidney, *J. Macoun*, 22, 41, 64, 97 (in Mo. Bot. Gard. Herb., 5682, 55342, 5742, 55343); Squamish, *J. Macoun* (in Mo. Bot. Gard. Herb., 55180); Vancouver Island, *J. Macoun*, 356, 357 (in Mo. Bot. Gard. Herb., 55331, 55332); Victoria, *J. Macoun*, 576 (in Mo. Bot. Gard. Herb., 63502).

Washington: Bingen, *W. N. Suksdorf*, 699; Hoquiam, *C. J. Humphrey*, 6374; Kalama, *C. J. Humphrey*, 6139; Renton, *C. J. Humphrey*, 6633; Tacoma, *W. A. Murrill*, 145, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 55726).

Oregon: Corvallis, *S. M. Zeller*, 1813 (in Mo. Bot. Gard. Herb., 56333); Eugene, *C. J. Humphrey*, 6086.

**63. *P. verticillata* Burt, n. sp.**

Type: in Mo. Bot. Gard. Herb.

Fructifications effused, thick, membranaceous, separable, whitish to ecru-drab in the herbarium, even the margin whitish, rather thick, cottony; in section 1300  $\mu$  thick, not colored, consisting of (a) a layer 500  $\mu$  thick next to the substratum of densely, longitudinally arranged hyaline hyphae about  $3-3\frac{1}{2}$   $\mu$  in diameter, and of (b) a zonate hymenial layer 800  $\mu$  thick containing many elongated cystidia; no gloecystidia; cystidia cylindric,  $150-200 \times 6-7$   $\mu$ , with 4-9 bands of incrusting matter, protruding up to 45  $\mu$ ; no spores found.

Fructifications  $1\frac{1}{2}-2\frac{1}{2}$  cm. long, 1-2 cm. wide.

On rotten coniferous wood. Oregon. March.

The cystidia of *P. verticillata* are of the thick-walled cylindric type occurring in *P. glebulosa* but without as narrow a lumen, nor with the latter abruptly, greatly enlarged near the apex. The bands of incrusting matter on the cystidia are a unique character of the type but are not retained in glycerine mounts of sections. The very broad layer of longitudinally arranged hyphae along the substratum and the very thick, separable fructifications tending to ecru-drab are probably the more distinctive characters of this species, which is distinct from *P. (Gloeocystidium) pallidula*.

## Specimens examined:

Oregon: Waltersville, C. C. Epling & J. B. Shorett, 600, type, comm. by S. M. Zeller, 2317 (in Mo. Bot. Gard. Herb., 63041).

+ 64. *P. crassa* Burt, N. Y. State Mus. Rept. 54: 155. 1901. *Stereum Karstenii* Bresadola, I. R. Accad. Agiati Atti III. 3: 108. 1897; Bourdot & Galzin, Soc. Myc. Fr. Bul. 37: 126. 1921.—Not *Peniophora Karstenii* Massee, Linn. Soc. Bot. Jour. 25: 153. 1889.—Not *Phanerochaete odorata* Karsten, Finska Vet.-Soc. Bidrag Natur och Folk 48: 427. 1889.—*Corticium ochroleucum*, in part, of Berkeley & Curtis, Grevillea 1: 165. 1875, but not of Fries.

Type: in Burt Herb.

Fructifications broadly effused, becoming thick, somewhat fleshy, light buff to pinkish buff, separable from the substratum when moistened if thick, the margin somewhat tomentose, determinate; in section 500–1500  $\mu$  thick, not colored, 2-layered, with the layer next to the substratum 200–300  $\mu$  thick, composed of densely interwoven, rather thick-walled and stiff, non-incrusted hyphae 3–4½  $\mu$  in diameter, and with the hymenial layer 300–1200  $\mu$  thick, more or less zonate, and composed of erect hyphae and cystidia; no gloeocystidia; cystidia even or sometimes somewhat incrusted, cylindric, flexuous, 100–500  $\times$  4½–6  $\mu$ , protruding up to 30  $\mu$  beyond the basidia, present in all parts of the hymenial layer, destroyed and dissolved by potassium hydrate treatment of sections; basidia 4-spored; spores white in spore collection, even, curved, 4½–6  $\times$  1½–2  $\mu$ .

Fructifications 3–20 cm. long, 1–4 cm. wide.

On decorticated, decaying logs of *Pinus*, *Abies*, *Picea*, *Tsuga*, and *Pseudotsuga*. In Europe and from Canada to Alabama and westward to the Pacific states. Common.

*P. crassa* is certainly cogeneric with *P. glebulosa*, belongs in the same group of species, occurs on the same substrata and is probably equally destructive to wood. Its fructifications are thicker than those of *P. glebulosa* and crack into larger masses. The cystidia have thinner walls and larger lumen than those of *P. glebulosa* and are noteworthy for the destructive action of potas-

sium hydrate on them, so that it can not be safely used in clearing and swelling the sections. Lactic acid should be used instead.

I have included under *P. crassa* the two European specimens of *Stereum Karstenii* cited below, because of agreement in all characters except the much greater thickness of the latter and their curling away from substratum at the margin and separation of the whole fructification in a sheet-like mass. American specimens of *P. crassa* range from 500 to 1000  $\mu$  thick and have the margin closely adnate to the substratum. Perhaps there is specific difference between *P. crassa* and *Stereum Karstenii*.

Specimens examined:

Exsiccati: Ellis, N. Am. Fungi, 331, under the name *Corticium ochroleucum* var. *spumeum*; Ravenel, Fungi Car. 3: 33, under the name *Corticium ochroleucum*.

Hungary: A. Kmet, type of *Stereum Karstenii* from Bresadola.

France: Aveyron, A. Galzin, 20064, comm. by H. Bourdot, 20799.

Canada: J. Macoun, 42; Quebec, J. Macoun, 260; Ottawa, J. Macoun, 248, in part.

New Hampshire: Chocorua, W. G. Farlow, 23, and an unnumbered specimen.

Vermont: Middlebury, E. A. Burt, two gatherings; Ripton, E. A. Burt, type.

Massachusetts: Magnolia, W. G. Farlow, e; Sharon, A. P. D. Piguet, 139, comm. by Farlow Herb. (in Mo. Bot. Gard. Herb., 59360).

New York: Floodwood, E. A. Burt, C. H. Peck, 2; Ithaca, G. F. Atkinson, 8008; Keene, C. H. Peck, comm. by N. Y. State Mus. Herb., T 1 (in Mo. Bot. Gard. Herb., 54554); North Elba, C. H. Peck, comm. by N. Y. State Mus. Herb., T 9 (in Mo. Bot. Gard. Herb., 54555); Sylvan Beach, Oneida County, H. D. House (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 7460, 8293).

New Jersey: Newfield, J. B. Ellis, in Ellis, N. Am. Fungi, 331.

Pennsylvania: State College, L. O. Overholts, 3631 (in Mo. Bot. Gard. Herb., 54703).

North Carolina: H. W. Ravenel, 1521 (in Curtis Herb., 1763, under the name *Corticium ochroleucum* var. *erimosum*).

South Carolina: H. W. Ravenel, in Ravenel, Fungi Car. 3: 33,

and (in Curtis Herb., 2169, under the name *Corticium ochroleucum*).

Alabama: Auburn, comm. by Alabama Biological Survey.

Idaho: Addie, *E. E. Hubert*, comm. by J. R. Weir, 11976 (in Mo. Bot. Gard. Herb., 63329); Coolin, *J. R. Weir*, 11558 (in Mo. Bot. Gard. Herb., 63299); Priest River, *J. R. Weir*, 108, 378, 6351 (in Mo. Bot. Gard. Herb., 16060, 21353, 55951) and 3, 24, 46, 50, 56.

British Columbia: Kootenai Mts., near Salmo, *J. R. Weir*, 455, 498 (in Mo. Bot. Gard. Herb., 8760, 21632); Revelstoke, *C. W. Dodge*, 1654 (in Mo. Bot. Gard. Herb., 58788); Sidney, *J. Macoun*, 63, 393 (in Mo. Bot. Gard. Herb., 5741, 55325).

Washington: Kalama, *C. J. Humphrey*, 6214 (in Mo. Bot. Gard. Herb., 20431).

Arizona: Flagstaff, *W. H. Long*, 21386 (in Mo. Bot. Gard. Herb., 55140); Fort Valley Experiment Station, *W. H. Long*, 19624 (in Mo. Bot. Gard. Herb., 20133).

65. *P. subalutacea* (Karst.) v. Höhnelt & Litschauer, K. Akad. Wiss. Wien Sitzungsber. **115**: 1601. 1906; Bourdot & Galzin, Soc. Myc. Fr. Bul. **28**: 387. 1913; Wakefield, Brit. Myc. Soc. Trans. **5**: 133. 1914; Rea, Brit. Basid. 688. 1922.

*Corticium subalutaceum* Karsten, Soc. pro Fauna et Flora Fennica Meddel. **9**: 65. 1883; Finska Vet.-Soc. Bidrag Natur och Folk **48**: 414. 1889; Sacc. Syll. Fung. **6**: 636. 1888; v. Höhnelt & Litschauer, K. Akad. Wiss. Wien Sitzungsber. **115**: 1560. 1906.—*Kneiffia subalutacea* (Karsten) Bresadola, Ann. Myc. **1**: 104. 1903.

Type: authentic specimen or perhaps part of type in Burt Herb.

Fructifications long and widely effused, very thin, closely adnate, pale olive-buff to pinkish buff in the herbarium, hymenium loose and rather rough under a lens, the margin thinning out; in section 30–100  $\mu$  thick, not colored, with the hyphae interwoven, rather rigid and thick-walled, about  $2\frac{1}{2}$   $\mu$  in diameter, not incrustated, cylindric, thin-walled,  $4\frac{1}{2}$ –6  $\mu$ , protruding up to 60  $\mu$  beyond the basidia, often starting from the substratum, sometimes somewhat clustered at slight elevations of the hymenium;

spores hyaline, even, narrowly cylindric, slightly curved, about  $4\frac{1}{2}$ –7  $\times$   $1\frac{1}{2}$   $\mu$ .

Fructifications 3–10 cm. long, 1–3 cm. wide.

On decaying pine wood. Europe, New Jersey to Louisiana, and in Washington. July to March. Rare.

The cystidia of *P. subalutacea* place it in the group with *P. glebulosa* and *P. crassa*. It is thinner than either of these. It may be distinguished from thin forms of the former by the thin-walled cystidia which have a lumen of nearly uniform diameter which is not abruptly and greatly enlarged near the apex of the cystidium.

Specimens examined:

Sweden: Femsjö, *E. A. Burt*.

Finland: Mustiala, *P. A. Karsten*, authentic specimen.

Poland: *Eichler*, comm. by *G. Bresadola*.

Austria: Tirol, *V. Litschauer*.

England: Baslow Foray, *A. D. Cotton*, comm. by *E. M. Wakefield* (in *Mo. Bot. Gard. Herb.*, 44583).

France: Aveyron, *A. Galzin*, 2444, comm. by *H. Bourdot*, 8007.

New Jersey: Newfield, *J. B. Ellis*, 7510, comm. by *W. G. Farlow* (in *Mo. Bot. Gard. Herb.*, 1794).

Maryland: Takoma Park, *C. L. Shear*, 1030.

Alabama: Montgomery County, *R. P. Burke*, 635 (in *Mo. Bot. Gard. Herb.*, 63071).

Louisiana: St. Martinville, *A. B. Langlois*, 0.

Washington: Mt. Paddo, *W. N. Suksdorf*, 726.

*Pen. luna Romell in Sched*

66. *P. odorata* (Karsten) Burt, n. comb.

*Phanerochaete odorata* Karsten, *Finska Vet.-Soc. Bidrag Natur och Folk* 48: 427. 1889. Not *Stereum odoratum* Fries, *Epicr.* 553. 1838.—Not *Stereum Karstenii* Bresadola, *I. R. Accad. Agiati Atti III.* 3: 108. 1897.

Type: in Burt Herb. from Karsten and probably in Karsten Herb.

Fructifications narrowly effused, small, pulvinate, somewhat convex, becoming longitudinally confluent, adnate, dry, felty, cartridge-buff to pale pinkish buff, velvety, the margin thick, entire; in section 500–1000  $\mu$  thick, not colored, at length zonate

or stratose, composed of a layer next to the substratum of interwoven, tough, hyaline hyphae 3–4  $\mu$  in diameter, and of 1–4 hymenial layers; no gloeocystidia; cystidia not incrustated, cylindric, 80–150  $\times$  6–9  $\mu$ , protruding up to 80  $\mu$  beyond the basidia, not destroyed by potassium hydrate treatment; basidia with 4 sterigmata; spores hyaline, even, 12–15  $\times$  4–6  $\mu$ , copious.

Fructifications 5 mm.–2½ cm. long, 3–10 mm. wide, rarely 5–10 cm. long by confluence.

On decorticated decaying wood and fence rails of *Pinus albicaulis*, *P. contorta*, *P. flexilis*, *P. Murrayana*, *P. silvestris*, *Abies grandis*, *Larix*, *Pseudotsuga*, and *Thuja*. In northern Europe, and in Wyoming, Montana, Idaho, British Columbia, Washington, and Arizona. Frequent.

*P. odorata* may be recognized by its small, thick, pulvinate, dry, velvety, pallid fructifications on old, weathered, blackened, coniferous wood, by large spores, and stratose fructifications which have even cystidia not affected by the potassium hydrate treatment of sections. Karsten referred his specimens to *Stereum odoratum* Fries, and Bresadola included the Karsten specimens under his *Stereum Karstenii* Bres., of which I regard the type to be a gathering made by Kmet in Hungary.

Specimens examined:

Finland: Mustiala, *P. A. Karsten*, type of *Phanerochaete odorata*.

Sweden: Bedaro, *L. Romell*, 412; Lappland, *L. Romell*, 413; Stockholm, *L. Romell*, 369.

Montana: Anaconda, *J. R. Weir*, 583 (in Mo. Bot. Gard. Herb., 63173); Bernice, *E. E. Hubert*, comm. by *J. R. Weir*, 12011 (in Mo. Bot. Gard. Herb., 63322); Hecla, *E. E. Hubert*, comm. by *J. R. Weir*, 11405 (in Mo. Bot. Gard. Herb., 63260); Choteau, *J. A. Hughes*, comm. by *J. R. Weir*, 5824 (in Mo. Bot. Gard. Herb., 55649); Libby, *E. E. Hubert*, comm. by *J. R. Weir*, 11351 (in Mo. Bot. Gard. Herb., 63259); Melrose, *E. E. Hubert*, comm. by *J. R. Weir*, 11427, 11433, 11439 (in Mo. Bot. Gard. Herb., 63261, 63274, 63279); West Butte, *J. A. Hughes*, comm. by *J. R. Weir*, 5496 (in Mo. Bot. Gard. Herb., 55647).

Wyoming: Fox Park, *J. R. Weir*, 10018 (in Mo. Bot. Gard. Herb., 55789).

Idaho: Bonanza, *G. G. Hedgcock*, comm. by *C. J. Humphrey*,

2527, in part; Coolin, *J. R. Weir*, 11526 (in Mo. Bot. Gard. Herb., 63291); Priest River, *E. E. Hubert*, comm. by J. R. Weir (in Mo. Bot. Gard. Herb., 63258).

British Columbia: Kootenai Mts., Salmo, *J. R. Weir*, 536 (in Mo. Bot. Gard. Herb., 22598).

Washington: Mt. Paddo, *W. N. Suksdorf*, 729.

Arizona: Coronado National Forest, Santa Catalina Mountains, *G. G. Hedgcock & W. H. Long*, comm. by C. J. Humphrey, 2544 (in Mo. Bot. Gard. Herb., 63534).

**67. *P. pilosa* Burt, n. sp.**

Type: in Burt Herb.

Fructifications effused, thin, closely adnate, hypochnoid, becoming pale olive-buff in the herbarium, the margin thinning out; in section 40–60  $\mu$  thick, not colored, composed of loosely arranged, thin-walled hyphae  $2\frac{1}{2}$ –3  $\mu$  in diameter, not incrusted, and of cystidia starting from the substratum; no gloeocystidia; cystidia not incrusted, thin-walled, cylindric,  $60$ – $100 \times 4\frac{1}{2}$ –7  $\mu$ , protruding up to 70  $\mu$  beyond the basidia, often constricted near the tip and terminating in an ovoid-shaped body; basidia 4-spored; spores hyaline, even,  $6$ – $8 \times 4$ – $4\frac{1}{2}$   $\mu$ , copious.

Fructifications fragmentary, with the largest fragment  $2\frac{1}{2}$  cm. long, 1 cm. wide.

On decaying coniferous wood. New York and Alabama. Probably rare.

*P. pilosa* forms a gray, downy covering on old weathered pine wood, with the basidia not forming a compact hymenium. In aspect this species somewhat resembles *P. tenuis* but there are no gloeocystidia, and the numerous long, cylindric cystidia, sometimes terminating in a single spore-shaped end and sometimes in a short row of 2 or 3, are distinctive.

Specimens examined:

New York: East Galway, *E. A. Burt*; Ithaca, *G. F. Atkinson*, 14415, type.

Alabama: Montgomery, *R. P. Burke*, 154 (in Mo. Bot. Gard. Herb., 3650).

**68. *P. Peckii* Burt, n. sp.**

Type: in Burt Herb. and probably in N. Y. State Mus. Herb.

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Fructifications broadly effused, somewhat membranaceous, separable from the substratum in small portions when moistened, thin, becoming cartridge-buff to cream-buff in the herbarium, not shining, cracking in drying, the margin thinning out; in section 60–360  $\mu$  thick, not colored, composed throughout of suberect hyphae about 4  $\mu$  in diameter, not incrusted and occasionally nodose-septate, of elongated flexuous cystidia, and of great numbers of subglobose, even chlamydospores  $4\frac{1}{2}$ –5  $\times$  4  $\mu$ ; cystidia not incrusted, flexuous, elongated, with somewhat the aspect of gloecystidia, 30–100  $\times$  6–9  $\mu$ , in all regions of fructification, many starting from the substratum, tapering upward, protruding up to 40  $\mu$  beyond the basidia; basidia with 4 sterigmata; basidiospores hyaline, even, subglobose, 5–6  $\times$  4 $\frac{1}{2}$   $\mu$ .

Fructifications 2–6 cm. long, 1–3 cm. wide.

On bare ground in woods and on bark and wood of decaying *Alnus*, *Betula*, *Populus*, *Quercus*, and *Ceanothus*, rarely on a coniferous substratum. Canada to Massachusetts and westward to Washington. July to March. Occasional.

*P. Peckii* is placed in the species group with *P. glebulosa* on account of the large, even-walled cystidia which are more flexuous than those of the latter species and with more the aspect of gloecystidia, but I have not yet demonstrated by granular contents that they are gloecystidia. *P. Peckii* is distinguished by the great number of subglobose spores distributed throughout the whole fructification in sections studied.

Specimens examined:

Canada: *J. Macoun*, 18, 51; Lower St. Lawrence Valley, *J. Macoun*, 5.

Massachusetts: Cherry Brook, *E. A. Burt* & *A. B. Seymour*; Magnolia, *W. G. Farlow* (in Burt Herb. and Mo. Bot. Gard. Herb., 44066); Sharon, *A. P. D. Piguet*, comm. by *W. G. Farlow*, 11 (in Mo. Bot. Gard. Herb., 55590) and by *Farlow* Herb., 132 (in Mo. Bot. Gard. Herb., 59622); Wellesley, *L. W. Riddle*, 11.

New York: Ithaca, *G. F. Atkinson*, 5089; Karner, *H. D. House*, comm. by N. Y. State Mus. Herb. (in Mo. Bot. Gard. Herb., 54361, 55204); Westport, *C. H. Peck*, 6, type; White Plains, *W. H. Ballou*, 1 (in Mo. Bot. Gard. Herb., 55030).

Michigan: Marquette, *C. J. Humphrey*, 1870 (in Mo. Bot. Gard. Herb., 11089).

Wisconsin: Blue Mounds, *E. T. & S. A. Harper*, 895.

Washington: Bingen, *W. N. Suksdorf*, 741, 907.

**69. *P. heterocystidia* Burt, n. sp.**

Type: in Burt Herb.

Fructifications broadly effused, separable from the substratum when moistened, becoming cracked in drying and often loosening from substratum along the fissures, whitish when young, becoming light drab, cinnamon drab or vinaceous drab, the margin often paler; in section not colored or with only the hymenial layer clay-colored or brownish, 200–400  $\mu$  thick, 2-layered, the layer next to substratum usually broad, composed of loosely interwoven, somewhat ascending or longitudinally arranged, hyaline, nodose-septate hyphae 3–4½  $\mu$  in diameter, the hymenial layer 40–80  $\mu$  thick, composed of cystidia, gloecystidia, and erect hyphae usually slightly colored near plane of origin from the under layer; cystidia consisting of both usual incrusted cystidia 25–35  $\times$  6–8  $\mu$ , distributed in all parts of the outer layer, and of very large cystidia up to 40–100  $\times$  20–50  $\mu$  which start from the base—often somewhat colored—of the hymenial layer; gloecystidia slender, flexuous, 40–60  $\times$  5–6  $\mu$ , between the basidia; basidia with 4 sterigmata; spores from spore collection white, even, cylindric, 12–15  $\times$  3½–4½  $\mu$ .

Fructifications 2–7 cm. in diameter.

On fallen limbs of gray birch, beech, maple, *Carpinus*, *Magnolia*, and other frondose species. Canada to Mississippi and westward to Missouri and in Mexico. June to March. Common.

*P. heterocystidia* resembles *Corticium laeve* Pers. (= *C. evolvens* Fr.) in color but is a true *Peniophora*, readily distinguished from our other separable species by having incrusted cystidia of the usual size, other very large cystidia up to 20–50  $\mu$  in diameter, and gloecystidia. Bresadola and von Höhnelt & Litschauer confused this species with *P. carnea*, from which it differs in being much thicker, separable from the substratum when moistened, and being colored within on the hymenial side instead of next

to the substratum. Rarely a fructification may have the hymenium vary somewhat hydnaceous.

Specimens examined:

Exsiccati: Ellis, N. Am. Fungi, 716, under the name *Corticium glabrum*, 717a of some copies, under the name *Corticium subgiganteum*.

Canada: J. Macoun, 3, 10, 14, 46.

Ontario: Lake Rosseau, E. T. & S. A. Harper, 755; Ottawa, J. Macoun, 110.

Vermont: Middlebury, E. A. Burt, type, and 2 other gatherings.

Connecticut: Central Village, J. L. Sheldon, 23, comm. by N. Y. Bot. Gard. Herb.

New York: Bemis Heights, C. H. Peck (in N. Y. State Mus. Herb., under the name *Stereum albobadium*); Bronx Park, Class in Mycology (in N. Y. Bot. Gard. Herb., Mo. Bot. Gard. Herb., 61392, 61430, and Burt Herb.); Kirkland, H. D. House (in N. Y. State Mus. Herb., Mo. Bot. Gard. Herb., 59685, and Burt Herb.); Snyders, C. H. Peck (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 56018); Syracuse, L. M. Underwood, in some copies of Ell. & Ev., Fungi Col., 221, under the name *Corticium glabrum*; White Plains, W. H. Ballou (in Mo. Bot. Gard. Herb., 55034).

New Jersey: Newfield, J. B. Ellis.

Pennsylvania: Meadville, E. C. Smith, comm. by L. O. Overholts, 8337 (in Mo. Bot. Gard. Herb., 59475); West Chester, Everhart, Haines, Jefferis & Gray, in Ellis, N. Am. Fungi, 716.

District of Columbia: Washington, C. L. Shear, 1257a, 1260.

Mississippi: Ocean Springs, L. M. Underwood (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61484).

Ohio: Cincinnati, C. G. Lloyd, 191, 2790, 4518; Norwood, C. G. Lloyd, 2274.

Indiana: Millers, E. T. & S. A. Harper, 962; Union County, M. F. & L. O. Overholts & B. Fink, comm. by L. O. Overholts, 4204 (in Mo. Bot. Gard. Herb., 55636).

Illinois: Cypress, C. J. Humphrey, 1347 (in Mo. Bot. Gard. Herb., 42923); Glencoe, E. T. & S. A. Harper, 662, 646.

Kentucky: Crittenden, C. G. Lloyd (in Lloyd Herb., 1411, and Mo. Bot. Gard. Herb., 55626).

Missouri: Columbia, *B. M. Duggar*, 265, 288, 400, 472; Pacific, *B. M. Duggar* (in Mo. Bot. Gard. Herb., 63417); near St. Louis, *E. A. Burt* (in Mo. Bot. Gard. Herb., 63418).

Mexico: Tepeite Valley near Guernavaca, *W. A. & E. L. Murrill*, 400, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54551).

**70. *P. borealis* (Peck) Burt, n. sp.**

*Peniophora disciformis* (DC) Cooke var. *borealis* Peck in Harriman Alaska Exped. 5. The Fungi of Alaska, 43. 1904; Sacc. Syll. Fung. 17: 175. 1905.

Type: in Mo. Bot. Gard. Herb.

Fructifications effused, thick, membranaceous, separable, becoming light buff in the herbarium, velvety with the numerous cystidia, the margin thinner, entire, clay-color, free in some places; in structure 60  $\mu$  thick, not colored, composed of hyaline hyphae 2  $\mu$  in diameter, not incrusted, densely and longitudinally arranged along the substratum and then curving obliquely outward to form the hymenial layer, and of occasional slender gloeocystidial organs with enlarged clavate or pyriform tips up to  $4\frac{1}{2}$ –7  $\mu$  in diameter; cystidia incrusted, cylindric, 60–75  $\times$  6–9  $\mu$ , confined to the hymenial surface but in great numbers there, protruding nearly their whole length beyond the basidia; a single detached spore is hyaline, even, 10  $\times$  8  $\mu$ , but may be foreign.

Fructifications 5 mm.–2 $\frac{1}{2}$  cm. long, 5 mm.–10 mm. wide.

On bark of small decaying twigs of a frondose species—perhaps *Alnus*. Alaska. June.

*P. borealis* has aspect somewhat suggestive of *P. aurantiaca* but is more buff-colored, with darker margin becoming free, and with cystidia so long and numerous as to be very conspicuous when viewed with a lens. The abundance of these cystidia is so great as to be a very important character in the recognition of this species by preliminary inspection.

Specimens examined:

Alaska: Aqua Dulce River, Yakutat Bay, *W. Trelease*, 583, type (in Mo. Bot. Gard. Herb., 5006).

**71. *P. lepida* Bresadola, Mycologia 17: 70. 1925.**

Type: in Weir Herb.

Fructifications broadly effused, thick, waxy-membranaceous, separable from the substratum, somewhat horn-like and requiring moistening for a short time before sectioning, pinkish buff to light ochraceous-buff in the herbarium, somewhat pulverulent, the margin finally free and rolling up from the substratum; in section 500–600  $\mu$  thick, not colored, composed of densely arranged hyphae 3–3½  $\mu$  in diameter, which run longitudinally along the substratum and then curve obliquely into the hymenium; between the hyphae occur numerous slightly more deeply staining elongated organs of the nature of conducting organs or slender gloeocystidia; cystidia incrusted, cylindric, 6–8  $\mu$  in diameter, protruding up to 30  $\mu$  beyond the basidia, very numerous in the hymenial surface, the incrusted part about 20–45  $\mu$  long; no spores found.

Fructification 9 cm. long, 3½ cm. wide.

On a dead stub about 2½ cm. in diameter, of *Salix* sp. Idaho. June.

*P. lepida* has some resemblance to *P. gigantea* but is not quite as gelatinous in consistency as *P. gigantea* and occurs on *Salix*. The slender conducting hyphae or gloeocystidia should aid in recognizing the species. The broad layer of hyphae arranged longitudinally along the substratum and then curving outward into the hymenium is very like that of a resupinate *Stereum* but I recall no pileate *Stereum* of similar structure.

Specimens examined:

Idaho: National Forest, 50 miles east of Orofino, A. S. Rhoads (in Weir Herb., 16744, type).

**72. *P. Kauffmanii* Burt, n. sp.**

Type: in Mo. Bot. Gard. Herb., and probably in Kauffman Herb.

Fructifications long-effused, rather thin, adnate, small portions separable when moistened, between pale pinkish buff and tilleul-buff, not cracked, not waxy nor shining, the margin determinate, thinning out; in section 300–350  $\mu$  thick, 2-layered, with both layers of about equal thickness and the hymenial layer somewhat honey-yellow, the layer next to the substratum not colored, composed of loosely and longitudinally interwoven, thin-walled,

hyaline hyphae about  $3\ \mu$  in diameter, of irregular outline; hymenial layer composed of densely arranged, erect hyphae, gloeocystidia, and cystidia; gloeocystidia flexuous,  $45\text{--}100 \times 4\text{--}7\ \mu$ ; cystidia incrusted when wholly immersed, cylindric, obtuse,  $30\text{--}45 \times 6\text{--}8\ \mu$ , protruding  $20\text{--}30\ \mu$  beyond the basidia in incrusted, or more usually, non-incrusted form, not abundant; spores hyaline, even, curved,  $8\text{--}12 \times 2\frac{1}{2}\text{--}3\ \mu$ , with pointed and tapering base, copious.

Fructifications 2–10 cm. long but broken off at one end,  $1\text{--}2\frac{1}{2}$  cm. wide.

On decaying limbs of *Fagus*. Kentucky. September. Probably local.

Among our few species of *Peniophora* which have gloeocystidia, *P. Kauffmanii* should be readily recognized by its occurrence on beech, buff color, structure of 2 equal layers, and small, incrusted cystidia.

Specimens examined:

Kentucky: Harlan, *C. H. Kauffman*, 69, type (in Mo. Bot. Gard. Herb., 22827).

**73. *P. alba* Burt, n. sp.**

Type: in Burt Herb.

Fructifications effused, very thin, somewhat membranaceous, small pieces separable when moistened, white, even, not shining, somewhat cracked by contraction in drying, the margin thinning out; in section  $80\text{--}100\ \mu$  thick, not colored, with the hyphae loosely arranged near the substratum, suberect, branching, about  $3\ \mu$  in diameter, not incrusted, only rarely nodose-septate; gloeocystidia curved,  $30\text{--}45 \times 3\frac{1}{2}\text{--}4\frac{1}{2}\ \mu$ , usually starting from the substratum; cystidia not incrusted or with some incrusting granules, thin-walled,  $4\text{--}5\ \mu$  in diameter, protruding up to  $30\ \mu$  beyond the basidia; spores hyaline, even,  $4\text{--}5 \times 2\frac{1}{2}\ \mu$ .

Fructifications fragmentary and not showing ends nor more than one side; such fragments 5 cm. long, 10–15 mm. wide.

On bark of dead cedar or spruce. Canada. September.

*P. alba* seems possible of recognition among our many whitish species of *Peniophora* by its pure white color, presence of gloeocystidia in addition to cystidia, and occurrence on coniferous bark.

Specimens examined:

Canada: locality not given, *J. Macoun*, 57, type.

74. *P. tenella* Burt, n. sp.

Type: in Mo. Bot. Gard. Herb. and Farlow Herb.

Fructifications effused, white, tender, thin, loosely attached, separable when moistened, velvety, setulose with the large cystidia, the margin indeterminate, thinning out; in section 150–200  $\mu$  thick, not colored, composed of a dense hymenial layer 75–90  $\mu$  thick, borne on a loosely interwoven layer composed of thin-walled, hyaline hyphae 3–4  $\mu$  in diameter, nodose-septate, sometimes granule-incrusted; hymenial layer composed of basidia, gloecystidia, and incrusted cystidia; gloecystidia numerous, flexuous, tapering from the base, 45–75  $\times$  5–8  $\mu$ ; cystidia very large, heavily incrusted, conical, 60–100  $\times$  15–20  $\mu$ , wholly immersed, or protruding beyond the basidia up to 75  $\mu$ ; spores copious, hyaline, even,  $7\frac{1}{2}$ –9  $\times$  3–4  $\mu$ .

Fructifications 1–2 cm. in diameter.

On coniferous bark. New Hampshire and Massachusetts. September and October. Rare.

*P. tenella* is distinguished from *P. pubera* by occurrence on coniferous, rather than frondose, substratum, by being so loosely attached to the substratum that small portions needed for sectioning may be separated from the substratum when moistened, and by the loosely interwoven hyphal layer equalling or exceeding in thickness the hymenial layer and containing no gloecystidia nor cystidia.

Specimens examined:

New Hampshire: Chocorua, *W. G. Farlow*, type (in Mo. Bot. Gard. Herb., 7617).

Massachusetts: Cambridge, *A. P. D. Piguet*, comm. by *W. G. Farlow*, 30.

75. *P. duplex* Burt, n. sp.

Type: in Burt Herb.

Fructifications small, effused, thin, adnate, somewhat membranaceous, small pieces separable when moistened, becoming pale pinkish buff in the herbarium, even, not cracked, not shining, the

margin narrow, radiate-fibrillose; in section 100–200  $\mu$  thick, not colored, the hyphae with walls gelatinously modified, indistinct, about 3  $\mu$  in diameter, ascending, densely crowded together and interwoven and with numerous gloeocystidia present; gloeocystidia sometimes pyriform but usually more elongated, 20–45  $\times$  6–9  $\mu$ , in all regions of the fructification; cystidia incrustated, cylindric, 25–30  $\times$  4½–5  $\mu$ , protruding up to 20  $\mu$  beyond the basidia, confined to the hymenium; spores hyaline, even, flattened on one side, 5  $\times$  2½  $\mu$ .

Fructifications received in fragments 1–2 cm. long, 5–10 mm. wide.

On bark of *Pinus austriaca* (cult.). New York. October.

In general aspect *P. duplex* suggests small fructifications of *P. gigantea* but not curling away from the substratum at all. The cystidia are smaller than those of *P. gigantea* and the latter does not have gloeocystidia.

Specimens examined:

New York: Shelter Island, *W. G. Farlow*, type.

**76. *P. mutata* (Peck) Bresadola** in Bourdot & Galzin, Soc. Myc. Fr. Bul. 28: 399. 1913.

*Corticium mutatum* Peck, N. Y. State Mus. Rept. 43: 67. 1890.

Type: in N. Y. State Mus. Herb.

Fructifications broadly effused, membranaceous, fleshy, thick, separable when moistened, drying white to pinkish buff, sometimes centrally tuberculose or with raduloid teeth and occasionally with radial folds, sometimes cracking in drying and showing the white, fibrillose subiculum in the fissures, the margin white, radially byssoid; in structure 300–1000  $\mu$  thick, composed of loosely arranged, ascending, thin-walled, hyaline hyphae 3–4  $\mu$  in diameter, occasionally nodose-septate; gloeocystidia pyriform, 15  $\times$  7  $\mu$ , more or less numerous, sometimes grown out into elongated, flexuous form up to 100  $\times$  4–5  $\mu$ , occurring as hyphal ends or branches in the sybhymentum; cystidia incrustated or not incrustated, 50–100  $\times$  6–15  $\mu$ , sometimes not protruding beyond the basidia and sometimes so few present as to be found only after examination of several sections; basidia 4-spored, with short, thick, knob-like sterigmata; spores hyaline, even, cylindric, 8–16  $\times$  3–4  $\mu$ .

Fructifications 3–7 cm. long, 1–3 cm. broad, sometimes larger by confluence.

Common on bark of decaying logs and fallen branches of *Populus* and also on *Tilia*, *Quercus*, *Acer*, and other frondose species. Canada to Alabama, westward to Idaho, in Europe and in Japan. July to November and in April.

*P. mutata* is a thick, somewhat fleshy, white, or whitish species occurring usually on bark of fallen poplar and basswood and showing in sectional preparations pyriform gloeocystidia, cystidia, and spores usually about  $12 \times 3\frac{1}{2} \mu$ . This species approaches the genus *Radulum* in thickness of the fructification, its obliquely ascending hyphae, and in occasional specimens having some raduloid teeth; such specimens have the aspect of *Radulum orbiculare* but differ from it by presence of the pyriform bodies and cystidia.

Specimens examined:

Exsiccati: Ellis, N. Am. Fungi, 717 a, under the name *Corticium subgiganteum*, 719, under the name *Corticium laeve*; Ell. & Ev., Fungi Col., 308, under the name *Corticium laeve*.

Austria: Langenschönbich, *F. v. Hühnel*, comm. by V. Litschauer.

Canada: *J. Macoun*, 7, 52; Lower St. Lawrence Valley, *J. Macoun*, 11, 81; Ottawa, *J. Macoun*, 40, 41, and 136 (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55924); Ontario, Harraby, *E. T. & S. A. Harper*, 685.

Maine: Piscataquis County, *W. A. Murrill*, 2451 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61402); Portage, *L. W. Riddle*, 16.

Vermont: Middlebury, *E. A. Burt*, two gatherings.

New York: Ithaca, *G. F. Atkinson*, 22965; Karner, *H. D. House*, 14.153, 14.160 (in part), and two unnumbered specimens (in Mo. Bot. Gard. Herb., 44712, 44706, 54367, 55215); Sevey, *C. H. Peck*, type (in N. Y. State Mus. Herb.); Shokan, *C. H. Peck*, T24 (in Mo. Bot. Gard. Herb., 54660); Slingerlands, *C. H. Peck*, T 23 (in Mo. Bot. Gard. Herb., 54659); Syracuse, *L. M. Underwood*, 48 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61409, 61433); White Plains, *W. H. Ballou* (in Mo. Bot. Gard. Herb., 10458).

New Jersey: Newfield, *J. B. Ellis*, in Ellis, N. Am. Fungi, 717a, 719, and Ell. & Ev., Fungi Col., 308.

Florida: *W. W. Calkins*.

Alabama: Montgomery, *R. P. Burke*, 13 (in Mo. Bot. Gard. Herb., 17193).

Ohio: Preston, *C. G. Lloyd*, 1555; West Elkton, *L. O. Overholts*, 3164 (in Mo. Bot. Gard. Herb., 5712).

Indiana: Crawfordsville, *D. Reddick*, 6, 8, 13, 14.

Illinois: River Forest, *E. T. & S. A. Harper*, 631.

Michigan: Ann Arbor, *C. H. Kauffman*.

Wisconsin: Blue Mounds, *E. T. & S. A. Harper*, 871.

Minnesota: Princeton, *C. J. Humphrey*, 899 (in Mo. Bot. Gard. Herb., 21044).

Missouri: Columbia, *B. M. Duggar*, 561; Meramec Highlands, *P. Spaulding* (in Mo. Bot. Gard. Herb., 63746); Pickering, *E. Bartholomew*, 6425 (in Mo. Bot. Gard. Herb., 55195); St. Louis, *N. M. Glatfelter*, 1377, comm. by N. Y. Bot. Gard. Herb.; *E. A. Burt* (in Mo. Bot. Gard. Herb., 44073).

South Dakota: Custer, *J. R. Weir*, 10019 (in Mo. Bot. Gard. Herb., 55799).

Idaho: Priest River, *J. R. Weir*, 37; St. Maries, *J. R. Weir*, 560 (in Mo. Bot. Gard. Herb., 63179).

Japan: Bungo, *A. Yasuda*, 107 (in Mo. Bot. Gard. Herb., 57024).

77. *P. Allescheri* Bresadola, *Fungi Trid.* 2: 62. pl. 172. 1898; *Sacc. Syll. Fung.* 16: 194. 1902.—But not as understood by Bourdot & Galzin and by Wakefield.

*Kneiffia Allescheri* Bresadola, *Ann. Myc.* 1: 100. 1903.—*Gloeopeniophora Allescheri* (Bres.) v. Höhnelt & Litschauer, *K. Akad. Wiss. Wien Sitzungsber.* 117: 1082. 1908.

Type: in Bresadola Herb. and Burt Herb.

Fructifications broadly effused, membranaceous, fleshy, thick, drying white to pinkish buff, sometimes contracting in drying, curling away from the substratum more or less at the fissures and showing the white, fibrillose subiculum, the margin white, byssoid; in structure 300–1000  $\mu$  thick, composed of obliquely ascending and interwoven, hyaline hyphae more or less incrustated, 3–6  $\mu$  in diameter; gloeocystidia elongated, flexuous, 40–100  $\times$  4–7  $\mu$ , often continued beyond the deeply staining portion as an

undifferentiated hypha, numerous in the subhymenium; cystidia incrusted or not incrusted,  $30-60 \times 6-10 \mu$ ; spores hyaline, even,  $10-13 \times 3-4 \mu$ .

Fructifications 2-10 cm. long, 1-3 cm. broad.

On bark of fallen limbs of *Populus* and other frondose species. Canada to New York and westward to Washington, in West Indies, and in Europe.

The type of *P. Allescheri* and specimens of similar structure cited below differ so slightly from *P. mutata* that I have separated them from the latter only by all their gloecystidia being of slender elongated form and perhaps specially differentiated middle portions of hyphae, while the gloecystidia of *P. mutata* are terminal portions of hyphae and hyphal branches which are in many cases pyriform and in others afford indication by a pyriform base of having finally grown out from a pyriform body into an elongated gloecystidium. It may be that when someone can keep under observation and examination a specimen of *P. mutata* during its season, he may find that pyriform gloecystidia are present abundantly up to the time of copious spore production and then finally all become elongated so that the fructification would be referable to *P. Allescheri*. In this event *P. Allescheri* will become a synonym of *P. mutata* by priority of the latter.

While *P. mutata* has become correctly understood in Europe through my exchanges with Bresadola there is a misunderstanding there concerning *P. Allescheri*. Von Höhnelt & Litschauer studied the original specimen of *P. Allescheri* in Bresadola Herb. and state, *loc. cit.*, that this consists of a mixture of fructifications of *P. crenea* and *P. Allescheri*, the latter as described by Bresadola and figured in his plate. The specimen shared with me by Bresadola is in such close agreement with the plate that the colored drawing of the upper figure may have been made from it, and it agrees also with the description. Its data as to collection is given "ad corticem Fagi silv. Bavaria. *Allescher*." The portions of the original specimens communicated to Bourdot & Galzin and to Miss Wakefield are apparently of the *P. crenea* component, referred to by v. Höhnelt & Litschauer.

Specimens examined:

- Sweden: *L. Romell*, 439 (in Mo. Bot. Gard. Herb., 44305); Stockholm, *L. Romell*, 102.
- Germany: Bavaria, *Allescher*, comm. by Bresadola, part of type.
- Canada: Rideau Park, *J. Macoun*, 325; Ottawa, *J. Macoun*, 133, in part; Quebec, Ironsides, *J. Macoun*, 256.
- New Hampshire: Jackson, *W. H. Snell*, 624 (in Mo. Bot. Gard. Herb., 59246).
- Vermont: Middlebury, *E. A. Burt*.
- New York: Glasco, Ulster County, *P. Wilson*, 40 (in Mo. Bot. Gard. Herb., 54747); Ithaca, *H. E. Stork*, 6 (in Mo. Bot. Gard. Herb., 56643), *G. F. Atkinson*, 8031, 22761, *D. Reddick*, by Cornell Univ. Herb., 20567, *Van Hook*, Cornell Univ. Herb., 8011, and *Wright*, Cornell Univ. Herb., 8353.
- Ohio: *C. G. Lloyd*, 3920; College Hill, *C. G. Lloyd*, 3121 (in Lloyd Herb., Burt Herb., N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61419).
- Indiana: Crawfordsville, *A. R. Bechtel*, 10 (in Mo. Bot. Gard. Herb., 59648).
- Michigan: Ann Arbor, *C. H. Kauffman*, 12; New Richmond, *C. H. Kauffman*, 31 (in Mo. Bot. Gard. Herb., 9864).
- British Columbia: Vancouver Island, *J. Macoun*, 355 (in Mo. Bot. Gard. Herb., 55323).
- Washington: Bingen, *W. N. Suksdorf*, 702.
- West Indies: Grenada, Grand Etang, *R. Thaxter*, comm. by W. G. Farlow, 4.

78. *P. subcremea* v. Höhnelt & Litschauer, K. Akad. Wiss. Wien Sitzungsber. 115: 1600. text f. 6. 1906; Sacc. Syll. Fung. 21: 408. 1912.

Type: type distribution in Rabenhorst, Fungi Eur., 3230, under the name *Corticium lacteum*.

Fructifications effused, thin, closely adnate, becoming cartridge-buff to ivory-yellow in the herbarium, not cracked, the margin thinning out; in section 40–150  $\mu$  thick, not colored, composed of suberect, bushy-branched hyphae 2–3  $\mu$  in diameter, not incrusted, only occasionally nodose-septate, and of flexuous gloeocystidia 40  $\times$  4  $\mu$ , starting from the substratum in the type; cystidia not incrusted, 4½–6  $\mu$  in diameter, protruding up to

40  $\mu$  beyond the basidia; spores hyaline, cylindric,  $3\frac{1}{2}$ – $4\frac{1}{2} \times 2$ – $2\frac{1}{2} \mu$ , copious.

Fructifications  $1\frac{1}{2}$ –8 cm. long,  $1\frac{1}{2}$ –5 cm. wide.

On bark and wood of *Pinus*. Finland, Montana, and Manitoba. September to November. Rare.

The specimen from Manitoba is on bark of a frondose species, but agrees well in other respects with the specimens on pine. The small spores are a distinguishing character of *P. subcremea*.

Specimens examined:

Exsiccati: Rabenhorst, Fungi Eur., 3230, type distribution, under the name *Corticium lacteum*.

Finland: Mustiala, *P. A. Karsten*, in Rabenhorst, Fungi Eur., 3230.

Montana: Anaconda, *E. E. Hubert*, comm. by J. R. Weir, 12010 (in Mo. Bot. Gard. Herb., 63370).

Manitoba: Winnipeg, *G. R. Bisby & I. L. Connors*, 1183 (in Mo. Bot. Gard. Herb., 59047).

**79. *P. admirabilis* Burt, n. sp.**

Type: in Burt Herb.

Fructifications broadly effused, adnate, thin, membranaceous, small pieces separable, becoming cartridge-buff in the herbarium, fibrillose, not shining, even, with but few small cracks, the margin thinning out, with its hyphae loosely interwoven; in section 180–240  $\mu$  thick, not colored, composed of suberect, thin-walled hyphae  $3\frac{1}{2}$ –4  $\mu$  in diameter, not incrusted, of gloeocystidia both elongated and vesicular, and of large chlamydospores; cystidia cylindric, incrusted, up to  $105 \times 9 \mu$ , confined to the hymenium, somewhat disorganized by potassium hydrate solution; vesicular gloeocystidia and vesicular spaces up to  $45 \times 30 \mu$ ; chlamydospores as seen singly on hyphal branches are up to  $15 \times 9 \mu$ ; basidiospores white in spore collection, even,  $6$ – $7 \times 3 \mu$ , borne 4 to a basidium.

Fructifications 3–10 cm. long, 1–2 cm. wide.

On decaying wood of stump of *Ulmus*. New York. May.

*P. admirabilis* is well marked among our species which have gloeocystidia by the presence of large imbedded spores.

Specimens examined:

New York: Oneonta, *E. A. Burt*.

80. *P. versata* Burt, n. sp.

Type: in Burt Herb.

Fructifications effused, thin, membranaceous, small pieces separable when moistened, becoming pinkish buff in the herbarium, not waxy, the margin thinning out, fibrillose; in section 150–300  $\mu$  thick, not colored, composed of suberect, interwoven hyphae about 3  $\mu$  in diameter, with walls somewhat gelatinously modified, and of gloecystidia; gloecystidia numerous, flexuous, 35–55  $\times$  6–8  $\mu$ ; cystidia not incrustated, tapering towards the apex, 6  $\mu$  in diameter, protruding up to 40  $\mu$ , scarcely or perhaps not at all distinguishable from gloecystidia; basidia with 4 sterigmata; spores hyaline, even, 4–5  $\times$  2½–3  $\mu$ .

Fructifications 2–5 mm. long, 5–15 mm. wide.

On slightly decayed red fir planks and cross-ties. Washington. September and October.

The fructifications of *P. versata* stand out conspicuously against the blackened timber upon which they occur. The resemblance of the protruding cystidia to gloecystidia and the possibility that they have the function of gloecystidia or may be gloecystidia functioning as cystidia should enable this species to be readily distinguished from species containing cystidia and gloecystidia quite distinct from each other.

Specimens examined:

Washington: Chehalis, *C. J. Humphrey*, 6285; Edmonds, *C. J. Humphrey*, 7623, type.

81. *P. albo-straminea* Bresadola, *Mycologia* 17: 69. 1925.

Type: in Weir Herb.

Fructifications orbicular, finally confluent and broadly effused, thin, very tender, small pieces separable when moistened, becoming between cartridge-buff and ivory-yellow in the herbarium, somewhat cracked, even, the margin pruinose; in section 60–90  $\mu$  thick, not colored, composed of somewhat loosely arranged hyphae 3–5  $\mu$  in diameter, occasionally nodose-septate, and of gloecystidia; gloecystidia flexuous to zigzag, 40–60  $\times$  4½–6  $\mu$ ,

usually starting from the substratum and wholly immersed, sometimes protruding beyond the basidia; cystidia, if really distinct from gloeocystidia, not incrusting,  $4\frac{1}{2}$ –8  $\mu$  in diameter, protruding up to 30  $\mu$  beyond the basidia; spores hyaline, even,  $5\text{--}7\frac{1}{2} \times 3\text{--}4$   $\mu$ .

Fructifications 2–8 cm. long,  $1\frac{1}{2}$ –3 cm. wide.

On wood and bark of decaying *Alnus tenuifolia* and *Quercus californica*. Idaho and California. October.

The gloeocystidia, sometimes of zigzag form, and cystidia, which are possibly only protruding portions of gloeocystidia, are marked characters of the type specimen which should afford recognition of *P. albo-straminea* if these are constant specific characters. However, the buff color, *Alnus* substratum, and presence of gloeocystidia should suffice. In No. 17069 a foreign mycelium of coarse hyphae is underneath the fructification proper.

Specimens examined:

Idaho: Priest River, *J. R. Weir*, 17069, type, and 16818 (both in Weir Herb.).

California: Massack, Plumas National Forest, *A. S. Rhoads*, 17 (in Mo. Bot. Gard. Herb., 56986).

## 82. *P. Taxodii* Burt, n. sp.

Type: in Burt Herb.

Fructifications effused, very thin, closely adnate, whitish to pale olive-buff in the herbarium, the hymenium loose and rather hypochnoid under a lens, the margin indeterminate, thinning out; in section 45–60  $\mu$  thick, not colored, composed of erect, branching hyphae  $2\text{--}2\frac{1}{2}$   $\mu$  in diameter, not incrusting, not nodose-septate, and of numerous cystidia, gloeocystidia, and crystalline matter; cystidia not incrusting, thin-walled, tapering to a sharp apex, 6–8  $\mu$  in diameter, protruding 20–40  $\mu$  beyond the basidia, often starting from the substratum; gloeocystidia often not distinguishable from the cystidia except by granular, deeply staining contents, protruding up to 20–40  $\mu$  beyond the basidia; spores hyaline, even,  $7\text{--}7\frac{1}{2} \times 3\text{--}3\frac{1}{2}$   $\mu$ .

Fructification 7 cm. long,  $1\frac{1}{2}$ –2 cm. wide.

On decorticated top limb of prostrate top of *Taxodium dis-*

*tichum* left in the swampy woods. Texas. September. Probably local.

*P. Taxodii* has thin grayish fructifications on the blackened, weathered wood of a prostrate tree top left in lumbering operations. It is difficult to distinguish cystidia from gloecystidia in the sections unless the organs lacking contents which take the stain are cystidia and the deep-staining and more numerous bodies gloecystidia, for both start from the substratum, protrude beyond the hymenium, and taper to a sharp point.

Specimens examined:

Texas: Beaumont, *C. J. Humphrey*, 5947, type.

**83. *P. investiens* Burt, n. sp.**

Type: in N. Y. Bot. Gard. Herb., Mo. Bot. Gard. Herb., and Burt Herb.

Fructifications longitudinally effused, thin, adnate, small pieces separable when moistened, becoming cartridge-buff in the herbarium, even, not cracked, not shining, the margin thinning out, minutely tomentose; in section 180  $\mu$  thick, not colored, with a broad layer of densely interwoven hyphae  $2\frac{1}{2}$ –3  $\mu$  in diameter, thin-walled, not incrusted, not nodose-septate; gloecystidia flexuous,  $25\text{--}40 \times 4\text{--}5 \mu$ , immersed in the hymenium; cystidia not incrusted, 9  $\mu$  in diameter, protruding up to 60  $\mu$  beyond the basidia; basidia with 4 prominent sterigmata; spores hyaline, even,  $12\text{--}13 \times 3\text{--}3\frac{1}{2} \mu$ —one spore seen is  $15 \times 6 \mu$  but perhaps does not belong.

Fructifications 8 cm. long, 1 cm. wide.

On decaying stem of palmetto. Bermuda. December.

The presence of the gloecystidia in the hymenial layer and not also in the interwoven hyphae near the trama, together with the long spores and occurrence on palmetto, should enable the recognition of *P. investiens*.

Specimens examined:

Bermuda: *Stewardson Brown*, *N. L. Britton & F. J. Seaver*, 1324, type (in N. Y. Bot. Gard. Herb., Mo. Bot. Gard. Herb., 63730, and Burt Herb.).

**84. *P. incarnata* (Pers.) Karsten, Hedwigia 1889: 27. F. 1889; Finska Vet.-Soc. Bidrag Natur och Folk 48: 424. 1889;**

Massee, Linn. Soc. Bot. Jour. **25**: 147. Jl. 1889; Sacc. Syll. Fung. **9**: 241. 1891; Bourdot & Galzin, Soc. Myc. Fr. Bul. **28**: 404. 1913; Rea, Brit. Basid. 694. 1922.

*Thelephora incarnata* Persoon, Syn. Fung. 573. 1801; Myc. Eur. **1**: 130. 1822 (Corticium); Fries, Syst. Myc. **1**: 444. 1821; Elenchus Fung. **1**: 219. 1828.—*Corticium incarnatum* (Pers.) Fries, Epicr. 564. 1838; Hym. Eur. 654. 1874; Berkeley, Brit. Fung. 275. 1860; Berk. & Curtis, Grevillea **2**: 4. 1873; Peck, N. Y. State Mus. Rept. **24**: 80. 1872; Morgan, Cincinnati Soc. Nat. Hist. Jour. **10**: 201. 1888; Sacc. Syll. Fung. **6**: 625. 1888.—*Kneiffia incarnata* (Pers.) Bresadola, Ann. Myc. **1**: 103. 1903.—*Gloeopeniophora incarnata* (Pers.) v. Höhnelt & Litschauer, K. Akad. Wiss. Wien Sitzungsber. **116**: 816. 1907.—*Peniophora aemulans* Karsten, Finska Vet-Soc. Bidrag Natur och Folk **48**: 425. 1889; Sacc. Syll. Fung. **9**: 239. 1891.

Fructifications effused, closely adnate, drying pinkish cinnamon to warm buff, cracking, the margin sometimes paler, thinning out; in section 100–250  $\mu$  thick, not colored, composed of hyaline, thin-walled hyphae 2–3  $\mu$  in diameter, densely interwoven along the substratum and then becoming suberect and extending between more or less numerous gloeocystidia and some cystidia; gloeocystidia sometimes broadly ovoid, 30–45  $\times$  10–15  $\mu$ , usually more cylindric and narrower, 30–60  $\times$  6–10  $\mu$ ; cystidia becoming incrusted, 30–45  $\times$  6–10  $\mu$ , rarely protruding beyond the basidia; basidia with 4 sterigmata; spores hyaline, even, cylindric, flattened on one side, 6–10  $\times$  3–4½  $\mu$ .

Fructifications 2–10 cm. long, 1–2 cm. broad, sometimes in scattered, small, tubercular growths 2–5 mm. in diameter on lenticels of small limbs.

On wood and bark of fallen limbs of frondose species usually. Europe, Canada to Alabama, and westward to the Pacific states, and in Japan. Throughout the year. Common.

*P. incarnata* is recognizable by its closely adnate, reddish fructifications, spores 6–9  $\times$  3–4  $\mu$ , and abundant gloeocystidia. Sometimes one has to search several sections before finding an incrusted cystidium. The spores run slightly smaller in most American gatherings than in the fewer European specimens which I have seen and are with us usually only about 6–8  $\times$  3  $\mu$ .

## Specimens examined:

- Exsiccati: Cooke, *Fungi Brit.*, 7; Reliq. Farlowianae, 342; Ravenel, *Fungi Am.*, 140; Romell, *Fungi Scand.*, 33.
- Sweden: Stockholm, *L. Romell*, 67, 100, 101, and in Romell, *Fungi Scand.*, 33.
- Finland: Mustiala, *P. A. Karsten*, authentic specimen of *P. aemulans*.
- Austria: Tirol, *V. Litschauer*, four specimens.
- Italy: locality not given, *G. Bresadola*, two specimens.
- England: Knys Lynn, *C. B. Plowright*, in Cooke, *Fungi Brit.*, 7; Yorkshire, *E. M. Wakefield* (in Mo. Bot. Gard. Herb., 57124).
- Newfoundland: Bay of Islands, *A. C. Waghorne*, 5, 165 (in Mo. Bot. Gard. Herb., 43987, 5010).
- Ontario: Harraby, Lake Rosseau, *E. T. & S. A. Harper*, 791.
- Maine: Piscataquis County, *W. A. Murrill*, 1861 (in N. Y. Bot. Gard. Herb., Burt Herb., and Mo. Bot. Gard. Herb., 61591); Orono, *P. L. Ricker*, 621.
- New Hampshire: Chocorua, *W. G. Farlow*, c39 (in Mo. Bot. Gard. Herb., 43974), and in Reliq. Farlowianae, 342.
- Vermont: Middlebury, *E. A. Burt*, six gatherings; Ripton, *E. A. Burt*, two gatherings.
- Massachusetts: *W. G. Farlow*, 4; Sharon, *A. P. D. Piguet*, 5, two unnumbered specimens, comm. by *W. G. Farlow* (in Mo. Bot. Gard. Herb., 55220, 55446, 55600).
- New York: Albany, *H. D. House*, six gatherings (in Mo. Bot. Gard. Herb., 57412, 57457, 57519, 59684, 59700, 63448); Alcove, *C. L. Shear*, 246; Fulton, *A. E. Fivaz*, comm. by *A. H. W. Povah*, 136 (in Mo. Bot. Gard. Herb., 58158); Ithaca, *G. F. Atkinson*, 3034, *C. J. Humphrey*, *C. O. Smith*, comm. by *G. F. Atkinson*, 8225, *Van Hook*, comm. by *G. F. Atkinson*, 8066, *H. H. Whetzel*, Plant Path. Herb., 12228 (in Mo. Bot. Gard. Herb., 60599); Orient, *R. Latham*, 144 (in Mo. Bot. Gard. Herb., 44230); Orient Point, *R. Latham*, comm. by N. Y. State Mus. Herb. (in Mo. Bot. Gard. Herb., 55815, 55922); Syracuse, *L. M. Underwood*, 2, 89 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61567, 61598); Vaughns, *S. H. Burnham*, 14 (in Mo. Bot. Gard. Herb., 54500).
- Pennsylvania: Center Hall, *E. West*, comm. by *L. O. Overholts*,

- 3661 (in Mo. Bot. Gard. Herb., 54702); State College, *L. O. Overholts*, 4807 (in Mo. Bot. Gard. Herb., 56340); Trexlertown, *W. Herbst*, 23, and comm. by Lloyd Herb., 3611.
- Maryland: Takoma Park, *C. L. Shear*, 1337.
- District of Columbia: Washington, *C. L. Shear*, 1257, 1267.
- West Virginia: Paw Paw, *C. L. Shear*, 1174.
- South Carolina: Aiken, *H. W. Ravenel*, in Ravenel, *Fungi Am.*, 140.
- Florida: Royal Palm Hammock, *W. A. Murrill*, 123, 136, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 62098, 62099).
- Alabama: Auburn, *F. S. Earle*, 2299 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61416); Montgomery County, *R. P. Burke*, 19, 275, 630, 664, 666, 679, 699 (in Mo. Bot. Gard. Herb., 16700, 57158, 63099, 63076, 63101, 63097, 63103).
- Kentucky: *C. G. Lloyd*, 1878.
- Ohio: College Hill, *Aiken*, comm. by C. G. Lloyd, 2327.
- Wisconsin: Madison, *W. Trelease* (in Mo. Bot. Gard. Herb., 44314); Palmyra, *A. O. Stucki*, 39.
- Iowa: Woodbine, *C. J. Humphrey & C. W. Edgerton*, comm. by C. J. Humphrey, 6566 (in Mo. Bot. Gard. Herb., 20691).
- Missouri: Bismarck, *L. O. Overholts* (in Mo. Bot. Gard. Herb., 63454); Perryville, *L. O. Overholts*, 2687 (in Mo. Bot. Gard. Herb., 44287).
- Kansas: Phillips County, *E. Bartholomew*; Rooks County, *E. Bartholomew*, 2046 (in Mo. Bot. Gard. Herb., 4842, 44313).
- Colorado: Mancos, *G. G. Hedgcock*, comm. by C. J. Humphrey, 2551 (in Mo. Bot. Gard. Herb., 9783).
- New Mexico: Tyom Experiment Station, *W. H. Long*, 21564 (in Mo. Bot. Gard. Herb., 55142).
- Alaska: Farragut Bay, *W. Trelease*, 582 (in Mo. Bot. Gard. Herb., 4852).
- Washington: Bingen, *W. N. Suksdorf*, 715, 745, 760, 765, 881, 882, 904.
- Japan: Prov. Bungo, *A. Yasuda*, 119, 123 (in Mo. Bot. Gard. Herb., 59470, 59474).

○ 85. *P. aurantiaca* Bresadola in Bourdot & Galzin, *Soc. Myc. Fr. Bul.* 28: 402. 1913; Rea, *Brit. Basid.* 694. 1922.

*Corticium aurantiacum* Bresadola, Fungi Trid. 2: 37. pl. 144, f. 2. 1892; Sacc. Syll. Fung. 11: 126. 1895.—*Kneiffia aurantiaca* Bresadola, Ann. Myc. 1: 103. 1903.—*Gloeopeniophora aurantiaca* (Bres.) v. Höhnelt & Litschauer, K. Akad. Wiss. Wien Sitzungsber. 117: 1094. 1908.

Type: probably in Bresadola Herb.; authentic specimen in Burt Herb.

Fructifications effused, beginning as small, convex outgrowths at lenticels of the bark, spreading so as to form circular patches which become confluent, adnate, bright orange-pink to orange-chrome, fading in the herbarium to light pinkish cinnamon and light buff, the margin white at first, radiating; in section not colored, 150–250  $\mu$  thick, with the hyphae densely and longitudinally arranged in a rather broad layer next to the substratum except at the points of emergence from the lenticels, hyaline, thin-walled, 3–4  $\mu$  in diameter; gloeocystidia 30–60  $\times$  6–9  $\mu$ , abundant in the convex portions; cystidia rough-walled, pointed, up to 45  $\times$  8  $\mu$ , sometimes protruding 30  $\mu$  beyond the basidia, more often wholly immersed and 30  $\times$  4–5  $\mu$ ; basidia large, 60  $\times$  10–12  $\mu$ , often protruding beyond the immature basidia when fruiting and bearing 4 sterigmata; spores hyaline, even, 12–16  $\times$  6–12  $\mu$ .

Fructifications 1–5 mm. in diameter at first, then laterally confluent over areas 1–10 cm. long,  $\frac{1}{2}$ –2 cm. broad.

On dead *Alnus* of various species. Labrador to North Carolina, westward to northern United States and Canada to British Columbia and Oregon, and in Europe. August to November. Common.

*P. aurantiaca* is easily recognized by its occurrence on dead twigs of alder, in bright incarnate or orange-red fructifications with large spores up to 15  $\times$  10  $\mu$ . These spores are usually borne copiously and show well in crushed preparations. To demonstrate the gloeocystidia and cystidia it is necessary to examine sections cut through the convex or papilliform points of origin of the fructifications. Sometimes examination of many sections is necessary for demonstration of the cystidia. Failure to cut the sections from places above stated led me to refer gatherings of this species to *Corticium laetum* for some of my cor-

respondents. *C. laetum* may occur on *Alnus* and has color and spores like *P. aurantiaca*.

Specimens examined:

Exsiccati: de Thümen, Myc. Univ., 112, under the name *Corticium incarnatum*; Linhart, Fungi Hung., 438, under the name *Peniophora incarnata*.

Sweden: *L. Romell*, 62.

Austria: Tirol, *V. Litschauer*, three specimens, *E. Rehm*, in Myc. Univ., 112.

Hungary: Petrozsény, *G. Linhart*, in Linhart, Fungi Hung., 438.

Italy: Trient Alps, *G. Bresadola*, authentic specimen.

England: Lyndhurst, Hamp., *E. M. Wakefield* (in Mo. Bot. Gard. Herb., 57127).

Labrador: The Strait, *A. C. Waghorne*, 5 (in Mo. Bot. Gard. Herb., 43986).

Newfoundland: Bay of Islands, *A. C. Waghorne*, 341 (in Mo. Bot. Gard. Herb., 5012).

New Brunswick: Campobello, *W. G. Farlow*, 1.

Canada: *J. Macoun*, 17, 116; Carleton's Place, *J. Macoun*, 158; Ottawa, *J. Macoun*, 25.

Maine: Costigan, *W. A. Merrill*, 1766 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61407); Kittery Point, *R. Thaxter & E. A. Burt*; Portage, *L. W. Riddle*, 13; Westbrook, *P. L. Ricker*, 977.

New Hampshire: Chocorua, *W. G. Farlow*, c6 (in Mo. Bot. Gard. Herb., 44124); Hanover, *G. R. Lyman*, 24 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61587).

Massachusetts: Weston, *A. B. Seymour*, T34 (in Mo. Bot. Gard. Herb., 15759).

New York: Childwold, *G. F. Atkinson & B. M. Duggar*, Cornell Univ. Bot. Dept. 5056; Hudson Falls, *S. H. Burnham*, 28 (in Mo. Bot. Gard. Herb., 54491); Karner, *H. D. House*, 14.164 and another specimen, comm. by N. Y. State Mus. Herb. (in Mo. Bot. Gard. Herb., 44713, 54372).

Pennsylvania: Bear Meadows, *L. O. Overholts*, 2677 (in Mo. Bot. Gard. Herb., 20277).

North Carolina: Chapel Hill, *W. C. Coker*, 4705 (in Mo. Bot. Gard. Herb., 57425).

Michigan: Gogebic County, *E. A. Bessey*, 184 (in Mo. Bot. Gard. Herb., 56581); Vermilion, *A. H. W. Povah* (in Mo. Bot. Gard. Herb., 18274).

Montana: Evaro, *J. R. Weir*, 410 (in Mo. Bot. Gard. Herb., 21617); Missoula, *J. R. Weir*, 349, 425 (in Mo. Bot. Gard. Herb., 6105, 14765).

Idaho: Addie, *J. R. Weir*, 12005 (in Mo. Bot. Gard. Herb., 63321).

Manitoba: Norway House, *G. R. Bisby*, 1460 (in Mo. Bot. Gard. Herb., 61642).

British Columbia: *J. Macoun*, 752, comm. by *J. Dearness* (in Mo. Bot. Gard. Herb., 12027); Agassiz, *J. R. Weir*, 359 (in Mo. Bot. Gard. Herb., 16760); Salmo, *J. R. Weir*, 515 (in Mo. Bot. Gard. Herb., 14170); Sidney, *J. Macoun*, 1, 72, 752 (in Mo. Bot. Gard. Herb., 5755, 55339, 55318).

Washington: Kalama, *C. J. Humphrey*, 6134; Olympia, *C. J. Humphrey*, 6304; Seattle, *W. A. Murrill*, 141, and an unnumbered specimen, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 55731, 55733).

Oregon: Corvallis, *S. M. Zeller*, 1906 (in Mo. Bot. Gard. Herb., 56882).

86. *P. pubera* (Fr.) Sacc. Syll. Fung. 6: 646. 1888; Masee, Linn. Soc. Bot. Jour. 25: 149. 1889; Bourdot & Galzin, Soc. Myc. Fr. Bul. 28: 400. 1913; Rea, Brit. Basid. 693. 1922.

*Thelephora pubera* Fries, Elenchus Fung. 1: 215. 1828.—*Cor-ticium puberum* Fries, Epicr. 562. 1838; Hym. Eur. 652. 1874; Patouillard, Tab. Anal. Fung. 1: 66. f. 152. 1883; Bresadola, Fungi Trid. 2: 38. pl. 145. f. 1. 1892.—*P. pubera* forma *villosa* Bresadola, I. R. Accad. Agiati Atti 3: 113. 1897.—*Kneiffia pubera* (Fr.) var. *villosa* Bresadola, Ann. Myc. 1: 101. 1903.

Fructifications effused, closely adnate, white, becoming dirty whitish to light buff and pinkish buff in the herbarium, and widely cracked, the hymenium even, setulose with the large cystidia, the margin indeterminate, thinning out; in section 45–400  $\mu$  thick, not colored, composed of rather crowded, erect hyphae 2–4  $\mu$  in diameter, thin-walled, not incrustated, and of gloecystidia and incrustated cystidia; gloecystidia flexuous, 30–60  $\times$  4½–9  $\mu$ ;

cystidia incrusted, conical, pointed, fusiform,  $50-90 \times 8-20 \mu$ , wholly immersed or protruding up to  $50 \mu$ ; spores hyaline, even, depressed on one side.

Fructifications 2-6 cm. long, 1-3 cm. wide.

On decaying wood, logs and limbs of frondose species, rarely on conifers. In Europe and from Canada to Louisiana and westward to British Columbia and Oregon. May to January. Common.

*P. pubera* is characterized by having gloeocystidia, large, conical, heavily incrusted cystidia, and spores usually  $7-9 \times 3\frac{1}{2}-4 \mu$ . The gloeocystidia show well in my permanent mounts in glycerine, after the sections have been stained with eosin and stood for a few hours in glycerine. I did not find an authentic specimen of *P. pubera* in Kew or Fries Herbaria but specimens received under this name from Bresadola, Litschauer, Romell, and Miss Wakefield have gloeocystidia in every specimen and other characters as stated and show agreement in the European concept of this species. Specimens with the other characters of *P. pubera* but lacking gloeocystidia should be compared with *P. guttulifera*. In North America, *P. pubera* forms thinner fructifications than in Europe and is sometimes paler, drying rarely whitish or with a slight yellowish tint.

Specimens examined:

Sweden: Göteborg, *L. Romell*, 174.

Germany: Westphalia, Lengerich, *W. Brinkmann*, authentic specimen of *P. pubera* Fr. f. *villosa* from Bresadola.

Austria: Tirol, Innsbruck, *V. Litschauer*, two specimens; Stubai, *V. Litschauer*.

Italy: Trient, *G. Bresadola*.

Great Britain: S. Wales, Swansea, *E. M. Wakefield* (in Mo. Bot. Gard. Herb., 57123).

Canada: Quebec, Hull, *J. Macoun*, 388.

New Hampshire: Chocorua, *W. G. Farlow*, 6, 6b, 27, and 29 (in Burt Herb.), and an unnumbered specimen and 152 (in Mo. Bot. Gard. Herb., 7843, 55244).

Massachusetts: Magnolia, *W. G. Farlow*, two specimens.

Rhode Island: Woonsocket, *W. H. Snell*, 7M, 8M (in Mo. Bot. Gard. Herb., 56805, 56806).

- New York: Ithaca, *G. F. Atkinson*, 8227, 14363, and *C. Thom*, comm. by *G. F. Atkinson*, 14372; *Karner, H. D. House*, 14.165 in part (in *Mo. Bot. Gard. Herb.*, 44715).
- New Jersey: Newfield, *J. B. Ellis*, three specimens (in *N. Y. Bot. Gard. Herb.*, and *Mo. Bot. Gard. Herb.*, 61401, 61443, 63467).
- Maryland: Takoma Park, *C. L. Shear*, 1129, 1158.
- District of Columbia: Takoma Park, *C. L. Shear*, 964.
- Virginia: Crabbottom, *W. A. Murrill* (in *N. Y. Bot. Gard. Herb.*).
- Florida: *W. W. Calkins*, 860 (in *N. Y. Bot. Gard. Herb.*, and *Mo. Bot. Gard. Herb.*, 61455).
- Alabama: Montgomery County, *R. P. Burke*, 207, 208, 277, 347, 375, 376, 377, 424, 460, 468, 658, 662, 806, 807 (in *Mo. Bot. Gard. Herb.*, 57080, 57081, 57159, 57218, 57245, 57244, 57243, 57261, 57282, 57287, 63085, 63087, 63109, and 63110 respectively).
- Louisiana: St. Martinville, *A. B. Langlois*, 2685, *cl.*
- Kentucky: Harlan, *C. H. Kauffman*, 66 (in *Mo. Bot. Gard. Herb.*, 16346).
- Wisconsin: Blue Mounds, *Miss A. C. Stucki*, 38; Madison, *C. J. Humphrey*, 2488 (in *Mo. Bot. Gard. Herb.*, 11277).
- Missouri: Creve Coeur Lake, *L. O. Overholts*, 3166, 661 (in *Mo. Bot. Gard. Herb.*, 5708, 5710).
- Montana: Anaconda, Mt. Hagan, *J. R. Weir*, 11253 (in *Mo. Bot. Gard. Herb.*, 63256).
- Idaho: Coolin, *J. R. Weir*, 11505, 11516 (in *Mo. Bot. Gard. Herb.*, 63286, 63289).
- Manitoba: Winnipeg, *G. R. Bisby*, 1345 (in *Mo. Bot. Gard. Herb.*, 60555).
- British Columbia: Cormac, *J. Macoun*, 658 (in *Mo. Bot. Gard. Herb.*, 55328); Sidney, *J. Macoun*, 788 (in *Mo. Bot. Gard. Herb.*, 55329); Vancouver Island, Oak Bay, *J. Macoun*, 600 (in *Mo. Bot. Gard. Herb.*, 55327); Victoria, *J. Macoun*, 564 (in *Mo. Bot. Gard. Herb.*, 55326).
- Washington: Chehalis, *C. J. Humphrey*, 6277.
- Oregon: Corvallis, *S. M. Zeller*, 1851, 1855, 1904 (in *Mo. Bot. Gard. Herb.*, 56863, 56864, 56880).

87. *P. pertenuis* (Karsten) Burt, n. comb.

*Corticium pertenuis* Karsten, *Hedwigia* 29: 270. 1890; Finska

Vet.-Soc. Bidrag Natur och Folk 51: 226. 1892; Sacc. Syll. Fung. 9: 234. 1891; v. Höhnelt & Litschauer, K. Akad. Wiss. Wien Sitzungsber. 115: 1556. 1906—(In part) *Gloeocystidium praetermissum* (Karst.) v. Höhnelt & Litschauer, K. Akad. Wiss. Wien Sitzungsber. 115: 1565. 1906.—An *Peniophora praetermissa* Karsten, Finska Vet.-Soc. Bidrag Natur och Folk 48: 423. 1889?

Type: probably in Karsten Herb. and fragment in Burt Herb.

Fructifications long-effused, closely adnate, not separable when moist, very thin, waxy, even, white or whitish, drying pale pinkish buff to cream color, the margin thinning out; in section 60–150  $\mu$  thick, not colored, with the hyphae 3–4  $\mu$  in diameter, erect, branching, not incrusted, bearing the compact hymenium; gloeocystidia numerous, variable in form, often tapering, 20–60  $\times$  6–8  $\mu$ ; cystidia hair-like, not incrusted, 4–5  $\mu$  in diameter, protruding up to 20  $\mu$  beyond the basidia, few and scattered; spores copious, hyaline, even, curved, 7–10  $\times$  4–5  $\mu$ .

Fructifications 2–10 cm. long, 1–2 cm. wide.

On decaying coniferous wood. In Europe, in Canada to District of Columbia, and in Oregon, Jamaica and Bermuda. July to November. Rare in North America.

The principal characteristics of *P. pertenuis* aiding in its recognition are occurrence in thin, whitish, waxy fructifications on old decaying coniferous wood, presence of gloeocystidia, and hair-like non-incrusted cystidia which are not destroyed in any degree by the treatment of the sections with potassium hydrate solution, and the curved spores. *P. tenuis* differs in having its cystidia incrusted at the tip. I have not seen an authentic specimen of *P. praetermissa* but the specimen sent to me under this name by Bresadola and one of the two specimens from Litschauer have their cystidia almost completely disintegrated by the potassium hydrate treatment in clearing and swelling the tissues of sections, as occurs also in *P. glebulosa*. Hence, I think that *P. praetermissa* may eventually be regarded by European mycologists as specifically distinct from *P. pertenuis*.

Specimens examined:

Finland: Mustiala, *P. A. Karsten*, portion of type, comm. by Bresadola, also authentic specimen on *Picea* from Karsten.

Sweden: Stockholm, *L. Romell*, 116, 138, 162, 163, 164, 183, 191, 193, 203, 212, 215.

Austria: Natters, Tirol, *V. Litschauer*, under the name *Gloeocystidium praetermissum*.

Canada: Ottawa, *J. Macoun*, 42, 313; St. Lawrence Valley, *J. Macoun*, 41.

New Hampshire: Chocorua, *W. G. Farlow*, 5.

New Jersey: Newfield, *J. B. Ellis* (in *N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb.*).

District of Columbia: Washington, *C. J. Humphrey*, 2525 (in *Mo. Bot. Gard. Herb.*, 20383).

Montana: Trego, *J. R. Weir*, 11969 (in *Mo. Bot. Gard. Herb.*, 63227).

Idaho: Coolin, *J. R. Weir*, 11512 (in *Mo. Bot. Gard. Herb.*, 63287); Priest River, *J. R. Weir*, 139 (in *Mo. Bot. Gard. Herb.*, 63468).

Oregon: Portland, *C. J. Humphrey*, 6127.

Washington: Falcon Valley, *W. N. Suksdorf*, 724.

Bermuda: Paget Marsh, on *Sabal*, *H. H. Whetzel*, *Ao*, *Abd* (in *Mo. Bot. Gard. Herb.*, 58719, 58906).

Jamaica: Troy and Tyre, *W. A. Murrill & W. Harris*, 1053, in part, comm. by *N. Y. Bot. Gard. Herb.*

88. *P. tenuis* (Pat.) Masee, *Linn. Soc. Bot. Jour.* 25: 149. 1889.

*Corticium tenue* Patouillard, *Rev. Myc.* 7: 152. 1885; *Tab. Anal. Fung.* 1: 203. *f.* 462. 1886; *Sacc. Syll. Fung.* 6: 632. 1889.—*Kneiffia tenuis* (Pat.) Bresadola, *Ann. Myc.* 1: 105. 1903.—*Gloeocystidium tenue* (Pat.) v. Höhnelt & Litschauer, *Wiesner Festschr. Wien*, 70. 1908; Bourdot & Galzin, *Soc. Myc. Fr. Bul.* 28: 364. 1913.

Fructifications effused, closely adnate, thin, white, drying whitish to pale pinkish buff, somewhat pruinose, the margin thinning out; in section 60–180  $\mu$  thick, not colored, with the hyphae erect, branching, 3–4  $\mu$  in diameter, thin-walled, not incrusted; gloeocystidia 20–60  $\times$  6–8  $\mu$ , flexuous; cystidia hair-like, cylindric, 4–6  $\mu$  in diameter, protruding 20–45  $\mu$  beyond the basidia, incrusted about the tip; spores hyaline, even, curved, 8–10  $\times$  4–4½  $\mu$ .

Fructifications 2–6 cm. long, 1–2 cm. wide.

On decaying wood and bark of frondose species more usually. Europe and Massachusetts. July to December. Rare.

*P. tenuis* is doubtfully distinct from *P. pertenuis*, having the same aspect and microscopical characters except that some of the cystidia have incrusting granules at the tips, as shown in the figures by Patouillard cited above.

Specimens examined:

Germany: Westphalia, Lengerich, *W. Brinkmann*, comm. by Bresadola.

Austria: Tirol, *V. Litschauer*.

France: Allier, St. Priest, *H. Bourdot*, 6530; Aveyron, *A. Galzin*, 11689, comm. by *H. Bourdot*, 18554.

Massachusetts: Brookline, Hammond's Pond, *G. R. Lyman*, 183.

89. *P. serialis* (Bres.) v. Höhnelt & Litschauer, *K. Akad. Wiss. Wien Sitzungsber.* 116: 777. 1907.

*Kneiffia serialis* Bresadola, *Ann. Myc.* 1: 101. 1903 (in part); Sydow, *Myc. Germ.*, 1. 1903.—Not *Xerocarpus Cacao* Karsten, *Hedwigia* 29: 271. 1890.—An *Corticium seriale* Fries, *Epicr.* 563. 1838?—*Corticium seriale* (Bres.) Bourdot & Galzin, *Soc. Myc. Fr. Bul.* 27: 253. 1911 (Forme 2).

Type: type distribution in Sydow, *Myc. Germ.*, 1.

Fructifications long and widely effused, thin, closely adnate, very variable in color, smoke-gray and pale olive-buff to wood-brown in the herbarium, even, sometimes cracked; the margin thinning out, indeterminate; in section 60–180  $\mu$  thick, not colored, composed of densely arranged, erect hyphae about 3  $\mu$  in diameter, with the outer portion of the wall gelatinously modified and indistinct, and of some scattered, yellowish or brownish, somewhat spherical masses 9–12  $\mu$  in diameter, immersed near the substratum; gloeocystidia in the unusual form of irregular, immersed spherical masses 9–12  $\mu$  in diameter; cystidia not incrustated, tapering to a sharp apex, 3–5  $\mu$  in diameter, protruding up to 30  $\mu$ ; spores hyaline, even, curved, 4–6  $\times$  1–2  $\mu$ .

Fructifications 3–12 cm. long, 2–5 cm. wide.

On decaying wood of logs of *Pinus*, *Abies*, *Tsuga*, and *Thuja*. Europe, New York, and Washington. August to May.

*P. serialis* resembles in aspect *P. Cacao* and *Corticium lividum*;

from the latter, the more common species, it is distinguished by its cystidia and from both by the immersed, spherical, colored masses near the substratum, such as were described and figured for another species with larger spores as gloecystidia by von Höhnelt & Litschauer in K. Akad. Wiss. Wien Sitzungsber. 116: 838. 1907.

Specimens examined:

Exsiccati: Sydow, Myc. Germ., 1.

Sweden: Femsjö, E. A. Burt, two gatherings.

Germany: Brandenburg, P. Sydow, type distribution, in Sydow, Myc. Germ., 1, and comm. by Bresadola.

New York: Floodwood, C. H. Peck, 8.

Washington: Sedro Woolley, C. J. Humphrey, 7538.

90. *P. typhicola* Burt, n. sp.

Type: in Burt Herb.

Fructifications effused, thin, adnate, somewhat membranaceous, tender, between whitish and pale olive-buff in the herbarium, even, not shining, not cracked, the margin thinning out, indeterminate; in section 60–75  $\mu$  thick, not colored near the substratum, composed of suberect, densely interwoven, thin-walled hyphae 2–3  $\mu$  in diameter, indistinct, and of incrusting cystidia and a few gloecystidia; gloecystidia flexuous, 25–30  $\times$  4–6  $\mu$ , few present; cystidia incrusting, 40  $\times$  15  $\mu$ , immersed, starting from the substratum; paraphyses with filiform tips about  $\frac{1}{2}$ –1  $\mu$  in diameter, with 1 or 2 lateral branches but not antler-shaped, in surface of hymenium; spores hyaline, even, 8–12  $\times$  3 $\frac{1}{2}$ –4  $\mu$ , two to a basidium.

Fructifications 2–10 mm. in diameter.

On dead *Typha latifolia*. New York.

This specimen was at first doubtfully referred to *P. phyllophila* which it resembles in aspect and somewhat in structure, but it is thicker, more dense, has gloecystidia, and does not have conspicuous antler-shaped paraphyses. Reference to *Epithele Typhae*, which I have been unable to find in our North American species, is precluded by the absence of hyphal fascicles.

Specimens examined:

New York: Ithaca, G. F. Atkinson, 261, type.

91. *P. filamentosa* (Berk. & Curtis) Burt in Coker, Elisha Mitchell Scientif. Soc. Jour. 36: 162. pl. 32, f. 5, 6. 1921.

*Corticium filamentosum* Berkeley & Curtis, Grevillea 1: 178. 1873; Sacc. Syll. Fung. 6: 619. 1888; Massee, Linn. Soc. Bot. Jour. 27: 154. 1890.—(In part) *Corticium Petersii* Berkeley & Curtis, Grevillea 1: 177. 1873.—*Peniophora unicolor* Peck, N. Y. State Mus. Rept. 43: 66. 1890; Sacc. Syll. Fung. 9: 239. 1891.—An *Corticium radicum* P. Hennings, Pilze Ostafrikas, 54. 1895; Sacc. Syll. Fung. 14: 222. 1899? See v. Höhnelt & Litschauer, K. Akad. Wiss. Wien Sitzungsber. 117: 1093. 1908.

Type: in Kew Herb. and Curtis Herb.

Fructifications broadly effused, membranaceous, loosely adnate, separable when moistened, soft, drying Isabella color to buffy citrine, the margin and subiculum concolorous with, or a little paler than, the hymenium, often extended into, or connected with, branching mycelial strands or cords; in section 150–400  $\mu$  thick, colored, with the hyphae loosely interwoven, thin-walled, 3–4  $\mu$  in diameter, densely incrustated with ochraceous granules which are not soluble in lactic acid preparations, but dissolve quickly when sections are treated with potassium hydrate solution and leave the sections bleached, after first becoming vinaceous; cystidia incrustated, 40–50  $\times$  6–8  $\mu$ , protruding up to 40  $\mu$ , confined to the hymenial layer; spores white in spore collection, even, 3–5  $\times$  2–3  $\mu$ .

Fructifications 2–10 cm. long, 1–3 cm. broad; sometimes much larger on logs by confluence longitudinally.

On decaying wood and logs and fallen limbs of frondose species. Germany, Canada to Alabama, and westward to Arizona, in Mexico, the West Indies, and Japan. July to January. Common.

Although colored like a *Coniophora*, *P. filamentosa* is easily recognized by its marginal mycelial strands, small and white spores, and hyphae incrustated with ochraceous granules which are soluble in the 7 per cent solution of potassium hydrate with which sections are usually treated. Since the original description of *Corticium Petersii* combines the characters of both *Peniophora sanguinea* and *P. filamentosa*, and one of the types is of one species

and the other of the other, *C. Petersii* has been reduced to synonymy and *C. filamentosum* of the same authors adopted for the present species.

Specimens examined:

Exsiccati: Ravenel, *Fungi Car.* 5: 28, the type distribution of *Corticium Petersii*.

Germany: Hannover, *Engelke* (in Mo. Bot. Gard. Herb., 43481, under the name *Peniophora radicata*).

Canada: *J. Macoun*, 298; Lower St. Lawrence Valley, *J. Macoun*, 6, 28, 38.

New Hampshire: Franconia, *W. G. Farlow*, 26.

Vermont: Middlebury, *E. A. Burt*, two gatherings.

New York: Albany, *L. O. Overholts*, 3389 (in Mo. Bot. Gard. Herb., 10179); Altamont, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55211); Bolton, *C. H. Peck*, 15; Bolton Landing, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55975, 56021); Cazenovia, *L. M. Underwood*, 46 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61405); East Berne, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 56016); East Galway, *E. A. Burt*, two gatherings; East Schaghticoke, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 56022); North Elba, *C. H. Kauffman*, 9 (in Mo. Bot. Gard. Herb., 16769); North Greenbush, *H. D. House*, 14.235 (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 14840, 44734); Hudson Falls, *S. H. Burnham*, 23 (in Mo. Bot. Gard. Herb., 54487); Ithaca, *G. F. Atkinson*, 7892; Staten Island, *W. H. Ballou* (in Mo. Bot. Gard. Herb., 10276); Syracuse, *L. M. Underwood*, type of *Peniophora unicolor* (in N. Y. State Mus. Herb.).

New Jersey: *J. B. Ellis*, comm. by *W. G. Farlow* (in Mo. Bot. Gard. Herb., 44645); Newfield, *J. B. Ellis*, 1518, comm. by *W. G. Farlow* (in Mo. Bot. Gard. Herb., 14645); Orange, *L. M. Underwood* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61576).

Maryland: Takoma Park, *C. L. Shear*, 1097.

North Carolina: Chapel Hill, *J. N. Couch*, Univ. N. C. Herb., 4607 (in Mo. Bot. Gard. Herb., 57423).

Alabama: *Peters*, type (in Kew Herb., and Curtis Herb., 6119),

- and in Ravenel, *Fungi Car.* 5: 28; Montgomery County, *R. P. Burke*, 425, 660 (in *Mo. Bot. Gard. Herb.*, 57270, 63086).  
Kentucky: Crittenden, *C. G. Lloyd* (in *Lloyd Herb.*, 10113, and *Mo. Bot. Gard. Herb.*, 65627).  
Ohio: *C. G. Lloyd*, 3883; Cincinnati, *C. G. Lloyd*, 4504.  
Michigan: New Richmond, *C. H. Kauffman*, 49 (in *Mo. Bot. Gard. Herb.*, 3734).  
Illinois: Riverside, *E. T. & S. A. Harper*, 852.  
Missouri: Columbia, *B. M. Duggar*, 447.  
Arizona: Fort Valley Experiment Station, *W. H. Long*, 21121 (in *Mo. Bot. Gard. Herb.*, 55138).  
Mexico: Jalapa, *W. A. & E. L. Murrill*, 178, 327, comm. by N. Y. Bot. Gard. Herb. (in *Mo. Bot. Gard. Herb.*, 44969, 54496).  
Cuba: *C. G. Lloyd*, 420 (in *Mo. Bot. Gard. Herb.*, 55173); Omaja, *C. J. Humphrey*, 2782 (in *Mo. Bot. Gard. Herb.*, 14850).  
Jamaica: Troy and Tyre, *W. A. Murrill & W. Harris*, 911, comm. by N. Y. Bot. Gard. Herb.  
Japan: Prov. Bunga, *A. Yasuda*, 113 (in *Mo. Bot. Gard. Herb.*, 59463).

92. *P. viticola* (Schw.) v. Höhnelt & Litschauer, *K. Akad. Wiss. Wien Sitzungsber.* 116: 779. *text f. 4.* 1907.

*Thelephora viticola* Schweinitz, *Naturforsch. Ges. Leipzig Schrift.* 1: 107. 1822; *Am. Phil. Soc. Trans. N. S.* 4: 168. 1832; Fries, *Elenchus Fung.* 1: 205. 1828.—*Corticium viticola* Fries, *Epier.* 561. 1838; *Sacc. Syll. Fung.* 6: 617. 1888; Masee, *Linn. Soc. Bot. Jour.* 27: 146. 1890; Coker, *Elisha Mitchell Scientif. Soc. Jour.* 36: 172. *pl. 33, f. 6.* 1921.—*Corticium crocicreas* Berkeley & Curtis, *Grevillea* 1: 178. 1873; *Sacc. Syll. Fung.* 6: 616. 1888. Not *C. crocicreas* Masee nor v. Höhnelt & Litschauer.—*Corticium subaurantiacum* Peck, *N. Y. State Mus. Rept.* 43: 67. 1890; *Sacc. Syll. Fung.* 9: 230. 1891.

Type: in Schweinitz Herb.

Fructifications effused, thin, adnate, soft, small portions separable when moistened, the tomentose subiculum and margin ochraceous orange, the hymenium even, grayish to buff-yellow and pruinose; in section 150–400  $\mu$  thick, with the denser and broader subhymenial region ochraceous orange and the more

loosely interwoven region next to the substratum yellow, the loosely interwoven hyphae thin-walled, 2–4  $\mu$  in diameter, not nodose-septate, incrustated with colored granules which give the color to the fructification, and are destroyed and dissolved by the action of potassium hydrate solution leaving the sections bleached; no gloeocystidia; cystidia not incrustated, thin-walled, cylindric, 6–9  $\mu$  in diameter, protruding 25–40  $\mu$  beyond the basidia; basidia with 4 sterigmata; spores white in collection on slide, even, 7–8  $\times$  4–5  $\mu$ .

Fructifications 1–2 cm. in diameter, becoming confluent over areas 3–8 cm. long, 2–5 cm. wide.

On bark and wood of decaying *Vitis*, *Abies*, *Acer*, and *Fagus*. Vermont to North Carolina, Kentucky, and Arkansas. July to October. Abundant locally.

*P. viticola* is conspicuous by the large, brilliant orange fructifications with paler, pruinose fertile hymenium which occur on rotting large stems of the wild grape and on logs in deep mountain forests. The bleaching of the sections through destruction and solution of the incrusting pigment granules is common also to *P. filamentosa*, from which *P. viticola* differs in more orange color and larger spores.

Specimens examined:

Exsiccati: Ravenel, *Fungi Car.* 3: 34.

Vermont: Bread Loaf, *E. A. Burt*; Little Notch, *E. A. Burt*; Middlebury, *E. A. Burt*, determination as *Corticium subaurantiacum* confirmed by Peck.

New York: Ampersand, *C. H. Peck* (in N. Y. State Mus. Herb., T 20, and Mo. Bot. Gard. Herb., 54638); Clear Water, *G. F. Atkinson*, 5043 (in Cornell Univ. Herb.); Floodwood, *E. A. Burt*; Lake Placid, *W. A. & E. L. Murrill*, 104 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 57344); Long Lake, *A. H. W. Povah*, 13 (in Mo. Bot. Gard. Herb., 9084); Marcy Trail, *C. H. Peck* (in N. Y. State Mus. Herb., T 19, and Mo. Bot. Gard. Herb., 54637); North Elba, *C. H. Kauffman*, 3 (in Mo. Bot. Gard. Herb., 6686); Ray Brook, *C. H. Peck* (in N. Y. State Mus. Herb., T 21, and Mo. Bot. Gard. Herb., 54639); Undercliff, comm. by Univ. Wis. Herb., 45.

North Carolina: Salem, *Schweinitz*, type (in Herb. Schweinitz).

Alabama: *Peters*, in Ravenel, *Fungi Car.* 3: 34, and as *Corticium crocicreas* Berk. & Curtis, type (in Kew Herb. and in Curtis Herb., 4542).

Kentucky: Mammoth Cave, *C. G. Lloyd*, 1601, 2661, and another specimen comm. by Ellis Herb.

Arkansas: Fordyce, *C. J. Humphrey*, 5799.

93. *P. sulphurina* (Karst.) v. Höhnelt & Litschauer, K. Akad. Wiss. Wien Sitzungsber. 115: 1573. 1906.

*Tomentella sulphurina* Karsten, Finska Vet.-Soc. Bidrag Natur och Folk 48: 420. 1889.—*Hypochnus sulphurinus* (Karst.) Sacc. Syll. Fung. 9: 243. 1891.

Type: authentic specimen—perhaps part of type—in Burt Herb.

Fructifications effused, adnate, the hymenium drying clay color, thin, brittle, even, here and there cracked and showing the mustard-yellow subiculum, the margin fibrillose-bysoid, mustard-yellow; in section 150–400  $\mu$  thick, pale yellow, with the hyphae loosely arranged, thin-walled, 4–6  $\mu$  in diameter, occasionally nodose-septate, some hyphae granule-incrusted; cystidia hair-like, not incrusted, 3–6  $\mu$  in diameter, protruding up to 30  $\mu$ , not numerous; spores hyaline, even,  $3-4 \times 2-2\frac{1}{2} \mu$ .

Fructifications 2–6 cm. long, 1–2 cm. broad.

On coniferous bark usually. In Finland, from New Hampshire to Alabama and westward to British Columbia and Oregon. August to November. Rare.

The American gatherings referred to *P. sulphurina* are a little paler than the European and the sections lose most of their color when floated on alcohol in sectioning so as to become not distinctly colored in section. In other respects our specimens agree so well with the authentic specimen that I believe they should be included in this species. Potassium hydrate solution does not change the color of the sections to vinaceous and bleach them as it does sections of *P. filamentosa*.

Specimens examined:

Finland: Jalasjärvi, authentic specimen from *P. A. Karsten*.

New Hampshire: Chocorua, *W. G. Farlow* (in Mo. Bot. Gard. Herb., 7872).

New York: Fall Creek, *G. F. Atkinson*, 7993; Ithaca, *E. J. Petey*, comm. by *C. J. Humphrey*, 471; Rainbow, *C. H. Peck* (in

N. Y. State Mus. Herb., T 32, and Mo. Bot. Gard. Herb., 54656); Yates, *C. H. Peck*, 33.

Pennsylvania: Delaware Water Gap, *W. A. Murrill*, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 61469).

New Jersey: Newfield, *J. B. Ellis*, comm. by W. G. Farlow (in Mo. Bot. Gard. Herb., 7764, 14290, 14770).

District of Columbia: Takoma Park, *C. L. Shear*, 1348.

Alabama: Montgomery, *R. P. Burke*, 145 (in Mo. Bot. Gard. Herb., 10359).

Kentucky: Crittenden, *C. G. Lloyd*, 3120.

South Dakota: Sylvan Lake, Custer, *J. R. Weir*, 10011 (in Mo. Bot. Gard. Herb., 55792).

Idaho: Priest River, *J. R. Weir*, 30.

British Columbia: Squamish, *J. Macoun*, 497, 534 (in Mo. Bot. Gard. Herb., 55182, 55181).

Oregon: Eugene, *C. J. Humphrey*, 1051.

**94. *P. carnosa* Burt, n. sp.**

Type: in Burt Herb., Mo. Bot. Gard. Herb., and N. Y. State Mus. Herb.

Fructifications long and broadly effused, thick, fleshy-membranaceous, adnate, barium-yellow to honey-yellow, of the same color within where cracked, the margin determinate, thinning out, somewhat radiate-fibrillose; in section 400–700  $\mu$  thick, colored like the hymenium in thick sections but very thin sections hyaline, somewhat zoned, composed of a very broad hyphal layer bearing a hymenial layer 50–60  $\mu$  thick, the hyphae hyaline, 5–6  $\mu$  in diameter; no gloeocystidia; cystidia hair-like, not incrustated, tapering to a sharp tip, 4  $\mu$  in diameter at the base, protruding up to 30  $\mu$  beyond the basidia, very numerous in the hymenial surface; basidia 4-spored; spores white in spore collection, even, 4–5  $\times$  2–2½  $\mu$ .

Fructifications 3–12 cm. long, 1½–6 cm. wide.

On bark and wood of coniferous logs such as *Pinus*, *Abies*, *Picea*, *Pseudotsuga*, *Juniperus*, and *Larix*, rarely on frondose species. In mountains of New England, New York, Minnesota, and British Columbia and Montana to New Mexico. May to October. Common in the Rocky Mountain forests.

*P. carnosa* may be recognized at sight by its large, thick, yellow fructifications occurring on coniferous logs in forests of the White Mountains, Adirondacks, and the Rocky Mountains. The abundant cystidia are too small to be visible with a lens, hence it is necessary to examine sections with a microscope to recognize the species as a *Peniophora* rather than a *Corticium*. It does not have the mustard-yellow subiculum of *P. sulphurina* nor does its hymenial layer flake away from the substratum as in the latter.

Specimens examined:

Maine: Piscataquis County, *W. A. Murrill*, 2311 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61596).

New Hampshire: Chocorua, *E. A. Burt*; Intervale, *L. O. Overholts*, 5039 (in Mo. Bot. Gard. Herb., 56351); North Conway, *L. O. Overholts*, 4732 (in Mo. Bot. Gard. Herb., 56117).

New York: Hague, *C. H. Peck*, type (in Burt Herb., N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 56019); North Elba, *C. H. Kauffman*, 4 (in Mo. Bot. Gard. Herb., 21307).

Minnesota: Cass Lake, *J. R. Weir*, 392 (in Mo. Bot. Gard. Herb., 12436).

Montana: Fortine, *E. E. Hubert*, comm. by *J. R. Weir*, 12013 (in Mo. Bot. Gard. Herb., 63323); Missoula, *J. R. Weir*, 383 (in Mo. Bot. Gard. Herb., 20892).

Idaho: Meadow Creek, *E. E. Hubert*, comm. by *J. R. Weir*, 11669, 11671 (in Mo. Bot. Gard. Herb., 63308, 63310); Priest River, *E. E. Hubert*, comm. by *J. R. Weir*, 11738 (in Mo. Bot. Gard. Herb., 63311), *J. R. Weir*, 355, 9100 (in Mo. Bot. Gard. Herb., 10883, 55955), and 26, 32, 51, 57, 62, 69.

British Columbia: Kootenai Mts. near Salmo, *J. R. Weir*, 450, 458, 464, 467, 468, 469, 479, 523, 530 (in Mo. Bot. Gard. Herb., 8767, 9121, 12613, 12287, 8766, 12534, 12907, 20976, and 16078 respectively).

Washington: Olympia, *C. J. Humphrey*, 6291.

New Mexico: Cienega Canyon, *W. H. Long*, 21470, 21515, 21561 (in Mo. Bot. Gard. Herb., 55148, 55149, 55150); Sulphur Canyon, *W. H. Long*, 21411 (in Mo. Bot. Gard. Herb., 55147); Tyom Experiment Station, *W. H. Long*, 21935 (in Mo. Bot. Gard. Herb., 55151).

95. *P. citrinella* (B. & C.) Burt, n. comb.

*Corticium citrinellum* Berkeley & Curtis, Linn. Soc. Bot. Jour. 10: 336. 1868; Sacc. Syll. Fung. 6: 616. 1888; Massee, Linn. Soc. Bot. Jour. 27: 147. 1890.

Type: in Curtis Herb. and probably in Kew Herb.

Fructifications effused, thin, tender, small pieces separable when moistened, barium-yellow, cracked and showing a byssoid, barium-yellow subiculum, the margin thinning out, sometimes with barium-yellow mycelial strands; in section 120–300  $\mu$  thick, barely barium-yellow when but slightly magnified but not perceptibly colored under high magnification and wholly bleached by treatment with potassium hydrate solution, 2-layered, with the broader layer next to the substratum and composed of loosely interwoven hyphae  $2\frac{1}{2}$ –3  $\mu$  in diameter under the incrustation of scattered, coarse granules, not nodose-septate, and with the hymenial layer 90  $\mu$  thick, compact; no gloeocystidia; wholly immersed cystidia few, incrustated,  $15 \times 9 \mu$ ; protruding cystidia hair-like, short,  $3\text{--}4\frac{1}{2} \mu$  in diameter, protruding up to 12  $\mu$ ; spores hyaline, even,  $3\text{--}4 \times 2\text{--}3 \mu$ .

Fructifications 1–3 cm. long,  $\frac{1}{2}$ –1 cm. wide.

On bark of logwood limb on the ground. West Indies. October to March.

*P. citrinella* belongs in the group of species with *P. sulphurina*, *P. limonia*, *P. Burtii*, and *P. subiculosa*, and appears distinct from each of these when specimens are compared with one another. It has priority over all the others as a species. Its distinguishing combination of characters is barium-yellow color, cracked hymenium showing subiculum of the same color, color bleached by treatment with potassium hydrate solution, short cystidia, and occurrence on frondose bark.

Specimens examined:

Cuba: C. Wright, 844, type (in Curtis Herb.); Pinar del Rio Province, Earle & Murrill, 381, comm. by N. Y. Bot. Gard. Herb.; Santa Clara Province, Earle & Murrill, 427, comm. by N. Y. Bot. Gard. Herb.

Jamaica: Hope Gardens, F. S. Earle, 164, comm. by N. Y. Bot. Gard. Herb.

**96. *P. Sacchari* Burt, n. sp.**

Type: in Mo. Bot. Gard. Herb.

Fructifications longitudinally effused, adnate, thin, somewhat membranaceous, noted as yellow when growing but now clay color in the herbarium, even, cracking into polygonal masses about  $\frac{1}{2}$  mm. in diameter which may curl away from the substratum more or less and show the exposed tissue colored like the hymenium, the margin thinning out, of finely interwoven hyphae; in section 75–110  $\mu$  thick, with the thin sections not colored appreciably, composed of densely arranged, suberect hyphae about 3  $\mu$  in diameter, not incrustated, not nodose-septate; no gloeocystidia; cystidia not incrustated, tapering towards the apex, 5–6  $\mu$  in diameter, protruding up to 30  $\mu$ ; spores hyaline, even,  $3\frac{1}{2}$ –4  $\times$   $2\frac{1}{2}$ –3  $\mu$ .

Fructifications 8 cm. long, 10–13 mm. wide.

On cane trash of *Saccharum officinarum*. Porto Rico. January.

*P. Sacchari* was listed by Johnston & Stevenson, Dept. of Agr. Porto Rico Jour. 1: 227. 1917, as *Peniophora* sp. It has not been received from other sources and is apparently a species local to Porto Rico or with a preference for a sugar-cane substratum. It should be conspicuous by its yellow color. *P. citrinella* is thicker and has incrustated cystidia.

Specimens examined:

Porto Rico: Rio Piedras, J. A. Stevenson, 1204, type (in Mo. Bot. Gard. Herb., 11787).

**97. *P. medioburiensis* Burt, n. sp.**

Type: in Burt Herb.

Fructifications effused, thin, felty, small pieces separable when moistened, becoming in the herbarium between light grayish olive and deep olive-buff, the margin thinning out and sometimes paler; in section 200–300  $\mu$  thick, colored like the surface, somewhat zonate, composed of suberect, thin-walled, even-walled hyphae 3  $\mu$  in diameter and of incrustated hyphae 5  $\mu$  in diameter over the incrustation; no gloeocystidia; cystidia usually not incrustated, sometimes granule-incrustated, cylindric, obtuse, 6–8  $\mu$  in diameter, protruding up to 30  $\mu$  beyond the basidia; basidia with 4 large sterigmata up to 6  $\mu$  long; spores white in spore collection, cylindric, 8–14  $\times$   $4\frac{1}{2}$ –6  $\mu$ .

Fructifications 5 mm.—3 cm. long, 5 mm.—1½ cm. wide.

On wood and bark of fallen, rotten limbs of *Carya*. Middlebury, Vermont. July. Seen but once.

This species is of felty or fibrillose structure like some species of *Hypochnus*, not at all waxy, and of dull, olivaceous color so as to be very inconspicuous on the fallen decaying limbs on which found. So few species of *Peniophora* have spores up to 14  $\mu$  long that the spore dimensions should prove in this instance an important character for recognition of *P. medioburiensis*.

Specimens examined:

Vermont: Battell Ledge, Middlebury, *E. A. Burt*, type.

98. *P. subsulphurea* (Karst.) v. Höhnelt & Litschauer, K. Akad. Wiss. Wien Sitzungsber. **115**: 1580, 1592. 1906; Bourdot & Galzin, Soc. Myc. Fr. Bul. **28**: 388. 1913.

*Corticium subsulphureum* Karsten, Soc. pro Fauna et Fl. Fennica Meddel. **6**: 12. 1881; Sacc. Syll. Fung. **6**: 632. 1888; Massee, Linn. Soc. Bot. Jour. **27**: 148. 1890.—*Xerocarpus subsulphureus* Karsten, Finska Vet.-Soc. Bidrag Natur och Folk **37**: 138. 1882; **48**: 417. 1889. See v. Höhnelt & Litschauer, K. Akad. Wiss. Wien Sitzungsber. **117**: 1093. 1908.—*Corticium subincarnatum* Peck, N. Y. State Mus. Rept. **42**: 122. 1889; Sacc. Syll. Fung. **9**: 232. 1891.

Type: authentic specimen in Burt Herb., and specimen cited by Karsten in Roumeguere, Fungi Gall., 4307.

Fructifications longitudinally effused, adnate, at first citron-yellow, soon cinnamon-buff, even, pulverulent, the margin thinning out, citron-yellow; in section 150–400  $\mu$  thick, with the hymenial layer and that next to the substratum usually slightly colored, the hyphae suberect and branching or loosely interwoven, thin-walled, hyaline, 3–4  $\mu$  in diameter, nodose-septate, not incrustated except perhaps with a few minute grains in the subhymenium; hymenium becoming 2-layered; cystidia hair-like, thin-walled, even or with a few incrusting granules, 4–5  $\mu$  in diameter, protruding up to 40  $\mu$ ; spores white in spore-collection, 4–5½  $\times$  2–2½  $\mu$ .

Fructifications 4–10 cm. long, 1–3 cm. broad.

On decaying decorticated wood of *Pinus* and *Abies* in mountain

forests. Europe and northern United States and Canada westward to Idaho and Manitoba. July to October. Uncommon.

This species may be recognized by its cinnamon-buff, yellow-margined, closely adnate fructifications which occur, so far as known at present, only on bare wood of spruce and pine. I cannot understand how von Höhnelt & Litschauer, *loc. cit.*, could have regarded *P. subsulphurea* as perhaps not specifically distinct from the Hannover specimens of *P. radicata* (*P. filamentosa*) which have their hyphae heavily incrustated with a yellow matter soluble in potassium hydrate solution, and much larger, more incrustated cystidia, and fructifications only loosely adnate when present on decorticated wood and margined with conspicuous mycelial strands.

Specimens examined:

Finland: Mustiala, *P. A. Karsten*, authentic specimen of *Xerocarpus subsulphureus*.

Sweden: *L. Romell*, 182.

France: Aveyron, *A. Galzin*, 21033, comm. by *H. Bourdot*, 18426.

Canada: Lower St. Lawrence Valley, *J. Macoun*, 62.

New York: Cascade, *C. H. Peck* (in *N. Y. State Mus. Herb.*, T. 31, and *Mo. Bot. Gard. Herb.*, 56072); Clear Lake, *G. F. Atkinson*, 5048; Floodwood, *E. A. Burt*, *C. H. Peck*, 5, and an unnumbered specimen (in *N. Y. State Mus. Herb.*, and *Mo. Bot. Gard. Herb.*, 56017); North Elba, *C. H. Peck*, type of *Corticium subincarnatum* (in *N. Y. State Mus. Herb.*).

Minnesota: Vermilion Lake, *E. W. D. Holway*, 155, the *Corticium epichlorum* of *Geol. & Nat. Hist. Survey of Minn.* but not *C. epichlorum* *Berk. & Curtis* (in *U. S. Dept. Agr. Herb. and Burt Herb.*).

Montana: Melrose, *E. E. Hubert*, comm. by *J. R. Weir*, 11431 (in *Mo. Bot. Gard. Herb.*, 63270).

Idaho: Priest River, *J. R. Weir*, 14.

Manitoba: Norway House, *G. R. Bisby*, 1478 (in *Mo. Bot. Gard. Herb.*, 61660).

+ 99. *P. martiana* (*Berk. & Curtis*) *Burt*, n. comb.  
*Corticium martianum* *Berkeley & Curtis*, *Grevillea* 1: 179.

1873; Peck, N. Y. State Mus. Rept. 30: 48. 1879; 40: 76. 1887; Sacc. Syll. Fung. 6: 633. 1888; Masee, Linn. Soc. Bot. Jour. 27: 144. 1890.

Type: type distribution in Ravenel, Fungi Car. 5: 30.

Fructifications widely effused, rather thick, somewhat tubercular or rugose, waxy, drying cinnamon to liver-brown and burnt umber and so hard as to require prolonged moistening before sectioning, the margin thinning out; in section 200–400  $\mu$  thick, colored like the hymenium, becoming dark vinaceous when treated with potassium hydrate solution, 2-layered, with the layer next to the substratum composed of longitudinally arranged, honey-yellow hyphae 3  $\mu$  in diameter, and with the hymenial layer thicker, denser, darker, and composed of densely interwoven hyphae and scattered cystidia; no gloecystidia; cystidia incrusted, conical, 30–45  $\times$  8–12  $\mu$ , wholly immersed or protruding up to 30  $\mu$  beyond the basidia; spores hyaline, even, 4–4½  $\times$  2½–3  $\mu$ .

Fructifications 1–10 cm. long, 1–4 cm. wide.

On very rotten wood of frondose species—*Betula* and *Populus* noted. Massachusetts to Alabama and in Ohio and Idaho. September to November. Rare.

*P. martiana* is usually blood-red in color, with substance of the same color, and with surface so tubercular or with so irregular folds as to suggest a *Phlebia*. It is likely to be confused with *Phlebia hydnoidea* Schw., from which it is sharply distinct by the more toothed surface and slightly colored cystidia of the latter.

Specimens examined:

Exsiccati: Ravenel, Fungi Car. 5: 30, type distribution.

Massachusetts: *Murray* (in Curtis Herb., 6251).

New York: Ithaca, *H. L. Jackson*, comm. by Cornell Univ.

Herb., 18659; Keene Valley, Adirondack Mts., *W. G. Farlow*.  
West Virginia: Eglon, *C. G. Lloyd*, 02678.

Florida: *R. Thaxter*, 14 (in Mo. Bot. Gard. Herb., 43934).

Alabama: *Peters*, in Ravenel, Fungi Car. 5: 30.

Ohio: College Hill, *C. G. Lloyd*, 1659.

Idaho: Coolin, *J. R. Weir*, 11116 (in Mo. Bot. Gard. Herb., 63251).

**100. *P. alutaria* Burt, n. sp.**

Type: in Burt Herb.

Fructifications effused, closely adnate, very thin, not at all separable, clay color in the herbarium, somewhat lacunose in some places, somewhat granular where thickest, the margin thinning out; in section 120–160  $\mu$  thick, showing a little color when only little magnified and giving the characteristic color to the fructification but hyaline under high magnification, composed of densely arranged, interwoven, suberect hyphae 3–3½  $\mu$  in diameter, not incrustated; no gloeocystidia; cystidia of two kinds: cylindric, hair-like, flexuous cystidia 3–3½  $\mu$  in diameter, not incrustated protrude up to 30  $\mu$  beyond the basidia and sometimes have capitate tips; smaller incrustated cystidia 10  $\times$  3  $\mu$  are present at surface of hymenium; basidia 4-spored; spores white in spore collection, even, subglobose, 3–3½  $\times$  3  $\mu$ . 3.5–4.5  $\times$  3–3.5  $\mu$   
and type!

Fragmentary pieces of fructifications are up to 5 cm. long, 2 cm. wide. Mass glabrous like wood

Type on wood of hardwood log of a frondose species in mountain woods, also on *Larix*. Vermont and Michigan. November. Rare.

*P. alutaria* seems possible of recognition by its clay color, closely adnate fructifications, and small spores and cystidia.

Specimens examined:

Vermont: Little Notch, Bristol, *E. A. Burt*, type.

Michigan: pole yard, Escanaba, *C. J. Humphrey*, 1783 (in Mo. Bot. Gard. Herb., 42931).

**101. *P. separans* Burt, n. sp.**

Type: in Mo. Bot. Gard. Herb. and Dodge Herb.

Fructifications broadly effused, adnate, somewhat membranaceous, small pieces separable when moistened, between pale ochraceous buff and avellaneous in the herbarium, even, somewhat cracked and showing the darker substance in the sides of the fissures, the margin thinning out, slightly darker, somewhat radiately fibrillose, adnate; in section 300–350  $\mu$  thick, colored, stratose, each stratum 2-layered, the supporting layer composed of densely and longitudinally interwoven, slightly colored hyphae 3–3½  $\mu$  in diameter, the hymenial layer 75–

120  $\mu$  thick, composed of densely arranged, erect tissue; no gloeocystidia nor conducting organs; cystidia incrusted,  $40-50 \times 8-15 \mu$ , numerous, immersed, starting from the base of the hymenial layer; spores hyaline, even,  $8-10 \times 2-3 \mu$ .

Fructifications probably large, for those studied are 4 cm. long by 4 cm. wide and broken off on three sides.

On bark of coniferous log. British Columbia. September.

*P. separans* has some resemblance in color and aspect to *P. ciliata* and resupinate *Stereum sanguinolentum*, but the stouter, wholly immersed cystidia distinguish *P. separans* from the former species, and the presence of cystidia and lack of conducting organs from the latter. The type has two strata, the other specimen only a single stratum of two layers.

Specimens examined:

British Columbia: Porcupine Creek, south of Beavermouth, C. W.

Dodge, 1702, type, and 1704 (in Mo. Bot. Gard. Herb., 58797, 58798, and in Dodge Herb.).

**102. *P. stratosa* Burt, n. sp.**

Type: in Mo. Bot. Gard. Herb.

Fructifications broadly effused, adnate, thick, stratose, somewhat cartilaginous-coriaceous, hard when dry, becoming pinkish buff to light ochraceous buff in the herbarium, cracking in drying and showing the stratose context, the margin thinning out; in section 700  $\mu$  thick, pale yellowish, composed of 8 strata in the type, with the hyphae hyaline, densely interwoven and conglutinate, about  $2-2\frac{1}{2} \mu$  in diameter; cystidia incrusted, conical,  $45-55 \times 10-13 \mu$ , protruding up to 40  $\mu$ , present in all strata but more abundant and conspicuous in the outer half of the fructification and less distinct and perhaps becoming absorbed in the more deeply buried strata; spores copious, hyaline, even,  $4-5 \times 2-2\frac{1}{2} \mu$ .

Fructification 8 cm. long,  $3\frac{1}{2}$  cm. wide in the single piece constituting the type, which has natural margin on one side only and was broken from a larger mass.

On *Quercus densiflora* and *Eucalyptus*. California and Mexico. September.

*P. stratosa* is related to *P. similis* but has larger cystidia and spores.

Specimens examined:

California: Pinehurst, *E. E. Bethel*, 26273 (in Mo. Bot. Gard. Herb., 55437); Redwood Park, *W. H. Long*, 18514, type (in Mo. Bot. Gard. Herb., 55065).

Mexico: *A. Dampf*, comm. by *J. R. Weir*, 63537 (in Mo. Bot. Gard. Herb., 63710).

**103. *P. tabacina* Burt, n. sp.**

Type: in Burt Herb.

Fructifications effused, adnate, tawny olive to snuff-brown, the hymenium becoming cracked and showing in the fissures the concolorous subiculum, the margin thinning out, colored like the hymenium; in structure 150–400  $\mu$  thick, tawny olive throughout, 2-layered, with the layer next to the substratum composed of loosely interwoven, even-walled, colored hyphae 3–3½  $\mu$  in diameter, nodose-septate, not incrustated, and the hymenial layer about equal in thickness to the other, with its hyphae densely crowded together in a palisade layer and bearing basidia and sterigmata and containing some somewhat colored spores; cystidia not incrustated, cylindric, 6–8  $\mu$  in diameter, protruding up to 80  $\mu$ ; basidiospores hyaline, even, 6–9  $\times$  2½–3  $\mu$ , copious; slightly colored spores 9  $\times$  3  $\mu$  are present in the deeper portion of the hymenial layer of the type specimen.

Fructifications 2–9 cm. long, 1–2½ cm. broad.

On decaying coniferous wood and bark of logs. Wisconsin, Colorado, Washington, and Oregon. July to November. Rare.

*P. tabacina* is distinguished by its tobacco color throughout and hyphae and cystidia lacking incrustation. It lacks the radiate filamentous margin of *P. filamentosa* of somewhat similar color as well as the hyphal incrustation of the latter. The presence of colored spores in the subhymenium is suggestive of *Stereum rugisporum*, a species of the same color, occurring on coniferous substrata in the same regions, and more abundant material may show that *P. tabacina* is the thin, first-stratum stage of the latter, but the fructifications at hand are closely adnate to the substratum rather than loosely connected with it by the tomentose layer characteristic of many resupinate Stereums.

Specimens examined:

Wisconsin: Oconto Falls, *C. J. Humphrey*, 9445 (in Mo. Bot. Gard. Herb., 57176).

Colorado: Ouray, *C. L. Shear*, 1185, type.

British Columbia: Agassiz, *J. R. Weir*, 330 (in Mo. Bot. Gard. Herb., 63728); Sidney, *J. Macoun*, 19 (in Mo. Bot. Gard. Herb., 5734).

Washington: Olympia, *C. J. Humphrey*, 6343; Seattle, *C. J. Humphrey*, 6456; Sedro-Woolley, *C. J. Humphrey*, 7578 (in Mo. Bot. Gard. Herb., 10753).

Oregon: Corvallis, on prune bark, *Mrs. E. B. Zeller*, comm. by *S. M. Zeller*, 1871 (in Mo. Bot. Gard. Herb., 56872); Eugene, *C. J. Humphrey*, 6096.

**104. *P. fusco-marginata* Burt, n. sp.**

Type: in Burt Herb. and probably in Lloyd Herb.

Fructifications long-effused, membranaceous, separable, becoming pinkish buff to warm buff in the herbarium, not waxy nor cracked, the extreme margin byssoid, fuscous, colored like the supporting hyphal layer next to the substratum; in section 300–320  $\mu$  thick, colored next the substratum, 2-layered with (1) the layer next to the substratum composed of longitudinally arranged hyphae 4–5  $\mu$  in diameter, not incrusted, not nodose-septate, fuscous along the substratum, becoming colorless above, and (2) the hymenial layer of equal thickness, composed of colorless, erect hyphae somewhat granule-incrusted in an incrusted zone; no gloeocystidia; cystidia not incrusted, 6  $\mu$  in diameter at base, tapering to the apex, protruding up to 30–40  $\mu$  beyond the basidia; spores hyaline, even,  $5-6 \times 3-3\frac{1}{2}$   $\mu$ .

Fructifications 1–10 cm. long, the largest broken off at both ends,  $\frac{1}{2}$ –2 $\frac{1}{2}$  cm. wide.

On bark of fallen decaying frondose limbs. Florida and Louisiana. June and July. Local.

*P. fusco-marginata* has the unusual character of a colored layer of coarse, fuscous hyphae running over the substratum and only more or less completely covered by the buff, fertile portion of the fructification, so that the protruding colored portion forms a distinctive fuscous margin. The Florida specimen is sterile and too young for confident reference.

## Specimens examined:

Florida: Snapper Creek Hammock, *W. A. Murrill*, 226, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 62083).

Louisiana: St. Martinville, *A. B. Langlois*, 1947 and 100, type, comm. by Lloyd Herb., 2771.

**105. *P. similis*** (B. & C.) Masee, Linn. Soc. Bot. Jour. **25**: 147. 1889.

*Corticium simile* Berk. & Curtis, Linn. Soc. Bot. Jour. **10**: 337. 1868; Sacc. Syll. Fung. **6**: 631. 1888.

Type: in Kew Herb. and Farlow Herb., and a fragment in Burt Herb.

Fructifications broadly effused, adnate, becoming light buff to cream color in the herbarium, somewhat velutinous, cracked, the margin thin; in section marguerite-yellow and darker next to the substratum but with yellow color bleached by action of potassium hydrate solution on the sections, 200–500  $\mu$  thick in the type but finally up to 2 mm. thick, composed of densely arranged, erect hyphae 3  $\mu$  in diameter, and of great numbers of cystidia; cystidia incrusted, not colored, conical or fusiform, 15–25  $\times$  6–8  $\mu$ , very numerous in all regions; spores hyaline, even, allantoid, 4  $\times$  1  $\mu$ , borne 4 to a basidium.

Fructifications "spreading for several inches." Fragmentary specimens examined are 1–4 cm. in diameter.

On under side of frondose logs and fallen limbs. Florida, Mexico, West Indies, and Japan. October to March. Probably common.

*P. similis* closely resembles *Corticium portentosum* in aspect, and I am unable to distinguish it from the latter except by examination with the microscope which reveals the abundant, small, colorless cystidia. *P. tephra* is closely related but does not form as thick fructifications, and its fructifications are less cracked, darker-colored in section, with darker, thicker-walled, more erect and more crowded hyphae, and slightly larger spores.

## Specimens examined:

Florida: Cutler Hammock, *W. A. Murrill*, 63, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 62093); Royal Palm Hammock, *W. A. Murrill*, 112, 113, 119, 122, 125, all

comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 62094–62098, 62110).

Mexico: Guernavaca, *W. A. & E. L. Murrill*, 537, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54553); Orizaba, *W. A. & E. L. Murrill*, 777, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54612); Xuchiles, near Cordoba, *W. A. & E. L. Murrill*, 1211, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54600).

Cuba: *C. Wright*, 543, type (in Kew Herb., Farlow Herb., and Burt Herb.), *C. G. Lloyd*, 432 (in Mo. Bot. Gard. Herb., 55171); Alto Cedro, *Earle & Murrill*, 433, 553, both comm. by N. Y. Bot. Gard. Herb.; Ceballos, *C. J. Humphrey*, 2678, 2813, 2834 (in Mo. Bot. Gard. Herb., 9087, 14855, 14837); Managua, *Earle & Murrill*, 42, comm. by N. Y. Bot. Gard. Herb.; San Diego de los Baños, *Earle & Murrill*, 203, 260, 303, all comm. by N. Y. Bot. Gard. Herb.

Porto Rico: Rio Piedras, *J. A. Stevenson & R. C. Rose*, 6530 (in Mo. Bot. Gard. Herb., 55072).

Bermuda: *B. & J. Dodge*, comm. by N. Y. Bot. Gard. Herb.

Jamaica: Cinchona, *W. A. & E. L. Murrill*, 598, 658, comm. by N. Y. Bot. Gard. Herb.; Troy and Tyre, *W. A. Murrill & W. Harris*, 886, 1053, in part, comm. by N. Y. Bot. Gard. Herb.

Grenada: Grand Etang, *R. Thaxter*, comm. by W. G. Farlow, 7, 8.

Japan: Mt. Tsukikuma, Prov. Bungo, *A. Yasuda*, 100 (in Mo. Bot. Gard. Herb., 57018).

**106. *P. Seymouriana* Burt, n. sp.**

Type: type in Mo. Bot. Gard. Herb. and probably in Farlow Herb.

Fructifications long and broadly effused, thin, closely adnate, small portions separable when moistened, Verona brown to mummy-brown or fuscous, somewhat velvety, cracking into small areas, the margin determinate, entire; in structure 60–180  $\mu$  thick, colored throughout like the hymenium, composed of erect, colored, densely interwoven hyphae 3  $\mu$  in diameter, not incrusted, not nodose-septate, and of cystidia in all regions; no gloeocystidia; hymenial surface velvety through very numerous

branched paraphyses having final branches  $1\ \mu$  in diameter; cystidia incrusted,  $20\text{--}35 \times 12\text{--}15\ \mu$ , usually wholly immersed; spores not found.

Fructifications 12 cm. long and broken off at ends, 3 cm. wide.

On fallen decaying branches of undetermined frondose species. Georgia and Cuba. August and April. Probably rare.

*P. Seymouriana* has general aspect suggestive of a resupinate *Hymenochaete* or the effused stroma of an *Hypoxyton*. The fructifications are thinner than those of *P. tephra*, with less numerous cystidia and with the much darker hymenium becoming cracked like that of *Hymenochaete corrugata*.

Specimens examined:

Georgia: Glen Ella, Tallulah Falls, A. B. Seymour, type, comm. by Farlow Herb., G (in Mo. Bot. Gard. Herb., 44613).

Cuba: C. G. Lloyd, 145 (in Mo. Bot. Gard. Herb., 55495).

**107.** *P. laevigata* (Fr.) Masee, Linn. Soc. Bot. Jour. 25: 149. Je. 1889; Karsten, Finska Vet.-Soc. Bidrag Natur och Folk 48: 426. O. 1889; Bourdot & Galzin, Soc. Myc. Fr. Bul. 28: 408. 1913; Rea, Brit. Basid. 696. 1922.

*Thelephora laevigata* Fries, Elenchus Fung. 1: 224. 1828.—*Corticium laevigatum* Fries, Epicr. 565. 1838; Hym. Eur. 656. 1874; Sacc. Syll. Fung. 6: 628. 1888.—*Xerocarpus Juniperi* Karsten, Rev. Myc. 3<sup>o</sup>: 22. 1881.—*Kneiffia laevigata* (Fr.) Bresadola, Ann. Myc. 1: 104. 1903.

Fructifications effused, thin, snuff-brown, drab, or pale drab-gray, adnate, small pieces separable from the bark when moistened, becoming cracked when dry, the margin at length free; in section brown,  $200\ \mu$  thick, composed of very numerous, colored cystidia and thin-walled, hyaline hyphae  $2\text{--}4\ \mu$  in diameter; cystidia colored, cylindric-clavate or fusiform,  $25\text{--}50 \times 5\text{--}6\ \mu$ , thick-walled and rough above or perhaps somewhat incrusted, very numerous in all regions and giving their color to the trama as a whole; spores hyaline, even,  $7\text{--}8 \times 3\text{--}4\ \mu$ .

Fructifications  $2\frac{1}{2}\text{--}12$  cm. long,  $\frac{1}{2}\text{--}4$  cm. broad.

On bark of *Juniperus*. Canada, New York, and Europe. April and September. Rare.

This species may be recognized by its occurrence on *Juniperus*,

brown color within, and abundance of colored cystidia. European authors record it on bark of living *Juniperus communis*, but the data with the two American specimens which I have seen gave merely the kind of substratum, one of these being *Juniperus virginiana*.

Specimens examined:

Exsiccati: de Thümen, Myc. Univ., 2014, authentic specimen from Karsten of *Xerocarpus Juniperi*.

Sweden: L. Romell, 104, 105, 106; Femsjö, L. Romell, 407.

Finland: Mustiala, P. Karsten, in de Thümen, Myc. Univ., 2014.

Italy (?): locality not given, G. Bresadola.

England: Buckden, Yorkshire, E. M. Wakefield (in Mo. Bot. Gard. Herb., 57119).

Canada: J. Macoun, 24.

New York: Orient, Long Island, R. Latham (in Mo. Bot. Gard. Herb., 58907, and Burt Herb.).

**108.** *P. tephra* (B. & C.) Cooke, Grevillea 8: 20. pl. 123, f. 6. 1879; Sacc. Syll. Fung. 6: 643. 1888; Masee, Linn. Soc. Bot. Jour. 25: 143. 1889.

*Corticium tephrum* Berk. & Curtis, Linn. Soc. Bot. Jour. 10: 336. 1868.

Type: in Kew Herb., and in Curtis Herb. mounted on left of card, that on the right is *Stereum albobadium*.

Fructifications effused, adnate, between tilleul-buff and drab, becoming drab in the herbarium, somewhat velutinous, the margin thin, adnate, concolorous; in section brown throughout, zonate, 400–550  $\mu$  thick, composed of erect, flexuous, thick-walled, somewhat colored hyphae 3–4  $\mu$  in diameter, densely crowded together, and of very numerous cystidia; cystidia coarsely incrustated, conical, sometimes fusiform, 15–25  $\times$  6–9  $\mu$ , protruding up to 9–12  $\mu$ , not colored, very numerous, throughout the whole fructification; spores hyaline, even, 5  $\times$  2½–3  $\mu$ .

Fructifications 2–6 cm. long, ½–2 cm. broad.

On dead wood of frondose species. Mexico, Cuba, Porto Rico, and Bermuda. October to January.

Former accounts of *P. tephra* are erroneous because they were partly based on a gathering of resupinate *Stereum albobadium*.

*P. tephra* belongs in the group with *P. laevigata* and *P. pruinata* but does not have the colored cystidia of the former nor the pruinose hymenium of the latter. The Australian specimen from Berkeley under the name *P. tephra*, in N. Y. Botanical Garden Herbarium, has colored cystidia and is more probably *P. laevigata*.

Specimens examined:

Mexico: Motzorongo, near Cordoba, *W. A. & E. L. Murrill*, 997, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54623).

Cuba: *C. Wright*, type (specimen in Curtis Herb. mounted on left side of card); Ceballos, *C. J. Humphrey*, 2692 (in Mo. Bot. Gard. Herb., 21942); Ciego de Avila, *Earle & Murrill*, 592, comm. by N. Y. Bot. Gard. Herb.; Herradura, *Earle & Murrill*, 143, comm. by N. Y. Bot. Gard. Herb.

Porto Rico: Bayamon, *J. A. Stevenson*, 6760 (in Mo. Bot. Gard. Herb., 55059).

Bermuda: Agricultural Station, *H. H. Whetzel*, *Ak* (in Mo. Bot. Gard. Herb., 58909).

+ 109. *P. pruinata* (B. & C.) Burt, n. comb.

*Stereum pruinatum* Berk. & Curtis, Linn. Soc. Bot. Jour. 10: 332. 1868; Sacc. Syll. Fung. 6: 583. 1888; Masee, Linn. Soc. Bot. Jour. 27: 198. 1890.

Type: in Kew Herb. and Farlow Herb.

Effused, adnate, drying pale neutral gray to drab-gray, pruinose, cracking when thick, the margin very thin; in section fuscous throughout, becoming zonate and finally 1 mm. thick, composed of densely arranged, erect, colored hyphae  $3\mu$  in diameter and of very numerous cystidia in all regions of the section; cystidia incrusted, fusiform,  $18-22 \times 6-12\mu$ ; spores hyaline, even, subglobose, about  $3-4\frac{1}{2} \times 2\frac{1}{2}-3\mu$  in the few found.

Fructifications probably cover large areas, for those are  $5-10 \times 1-5$  cm. and fractured on 3 or all sides in the specimens seen.

On rotting hardwood logs. Florida, Alabama, Mexico, and the West Indies. June to March. Occasional.

Dried specimens have the livid or cinereous color of some forms of *P. cinerea* but with surface of rather more velvety tex-

ture, often not cracked at all or, when cracked, into areas ranging down to about 5 mm. in diameter. The fructifications of *P. pruinata* are much thicker than those of *P. cinerea* and darker throughout. When moistened, small pieces may be separated from the bark for sectioning.

Specimens examined:

Florida: Cocoanut Grove, *R. Thaxter*, 77 (in Farlow Herb., and Mo. Bot. Gard. Herb., 43897); Otter Creek, *C. J. Humphrey*, 6703 (in Humphrey Herb.); Palm Beach, *H. von Schrenk* (in Mo. Bot. Gard. Herb., 43043).

Alabama: Montgomery County, *R. P. Burke*, 374 (in Mo. Bot. Gard. Herb., 57242).

Mexico: Motzorongo, near Cordoba, *W. A. & E. L. Murrill*, 988 (in Mo. Bot. Gard. Herb., 54621); Orizaba, *W. A. & E. L. Murrill*, 764, in part, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54635).

Cuba: *C. Wright*, 193, type (in Farlow Herb., and Kew Herb.); Alto Cedro, Santiago de Cuba Province, *Earle & Murrill*, 516, 518, 544, 555, comm. by N. Y. Bot. Gard. Herb.; Ceballos, *C. J. Humphrey*, 2815.

Porto Rico: Mount Morales, near Utuado, *Mrs. E. G. Britton & D. W. Marble*, 1204, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 61486).

Jamaica: Hope Gardens, *W. A. Murrill*, 2, comm. by N. Y. Bot. Gard. Herb.; Moneague to Union Hill, *W. A. Murrill*, 1176, comm. by N. Y. Bot. Gard. Herb.

**110. *P. rimosissima* (B. & C.) Burt, n. comb.**

*Corticium rimosissimum* Berkeley & Curtis, Am. Acad. Arts & Sci. Proc. 4: 124. 1858; Sacc. Syll. Fung. 6: 639. 1888; Masee, Linn. Soc. Bot. Jour. 27: 122. 1890.—An *Stereum umbrinum* Berk. & Curtis?

Type: type distribution in *C. Wright*, Plants of U. S. North Pacific Expl. Exp., 110.

Fructifications broadly effused, rather thick, dry, membranaceous, separable in rather large pieces, pliant when dry, now bister in the herbarium, not shining, even, cracking through the colored hymenium into polygonal masses 1-4 to a mm. and

showing the underlying pale substance, the true margin unknown; in section 360–450  $\mu$  thick, colored in the hymenial layer, with the basal layer composed of obliquely ascending, loosely interwoven, thin-walled, hyaline hyphae 3–4  $\mu$  in diameter, not incrusted, not nodose septate, and of thick-walled, non-staining, hyaline organs  $4\frac{1}{2}$   $\mu$  in diameter, not incrusted, whose pointed tips protrude as cystidia up to 12  $\mu$  beyond the basidia; spores hyaline, even,  $6 \times 4\frac{1}{2}$   $\mu$ —few found and may not belong.

Fragmentary fructifications not having margin are 4 cm. long, 2 cm. wide.

On dead cane. Nicaragua.

*P. rimosissima* is closely related in color and structure to *Stereum umbrinum* but has colorless cystidia not incrusted and only  $4\frac{1}{2}$ –6  $\mu$  in diameter, and thinner fructifications which are not known yet to occur reflexed.

Specimens examined:

Nicaragua: *C. Wright*, type (in U. S. Dept. Agr. Herb.).

**111. *P. Weiri* Bresadola, Mycologia 17: 70. 1925.**

Type: in Weir Herb.

Fructifications long and broadly effused, thin, closely adnate, becoming cream-buff to chamois in the herbarium, even, somewhat cracked, the margin thinning out; in section 150  $\mu$  thick, concolorous with, and giving the color to, the fructification, composed of densely interwoven, rigid, slightly colored hyphae  $2\text{--}3\frac{1}{2}$   $\mu$  in diameter, not incrusted; gloeocystidia flexuous or sometimes filamentous,  $30\text{--}75 \times 3\text{--}5$   $\mu$ ; cystidia not incrusted, thin-walled, cylindric, obtuse, 6–8  $\mu$  in diameter, protruding up to 40–50  $\mu$  beyond the basidia, not numerous; basidia with 4 sterigmata; spores hyaline, even, cylindric,  $6\text{--}8 \times 3\text{--}3\frac{1}{2}$   $\mu$ , copious.

Fructifications 5–12 cm. long, 2–4 cm. wide.

On wood of decaying logs of *Pinus monticola*. Idaho. September.

The gloeocystidia of *P. Weiri* are unusual in their position, since they are occasionally oblique or parallel with the substratum, and more elongated than when in the more usual, erect position, nor did they become visible in my sections stained with

eosin until the sections have cleared somewhat in the permanent glycerine mount. The color of the densely interwoven tissue of the fructification should aid in recognition of the species.

Specimens examined:

Idaho: Priest River, *J. R. Weir*, 23345, type (in Weir Herb.).

**112. *P. Farlowii* Burt, n. sp.**

Type: in Burt Herb.

Fructifications effused, closely adnate, rather thick, pale olive-buff in the herbarium, even, somewhat cracked and showing the tissue to be horn-like and somewhat resin-colored (pecan-brown) where exposed on sides of the fissures, the margin thinning out, composed of finely interwoven hyphae; in section 250–350  $\mu$  thick, somewhat colored, inclosing some portions of the substratum, composed of densely interwoven and conglutinate hyphae 2–3  $\mu$  in diameter, not incrusted, not nodose-septate, indistinct; no gloeocystidia; cystidia incrusted, 30–70  $\times$  12–15  $\mu$ , protruding up to 30  $\mu$ , few and scattered; spores hyaline, even, 4  $\times$  2  $\mu$ .

Fructifications in fragments 2–3 cm. long, 2 cm. wide.

On very rotten frondose wood. New Hampshire. September.

*P. Farlowii* shows in the dried specimen a pale olive-buff hymenium covering a horn-like, somewhat resin-colored underlying layer; the cystidia are so large as to be a good distinctive character.

Specimens examined:

New Hampshire: Chocorua, Bowditch Swamp, *W. G. Farlow*, 16, type.

**113. *P. coloreae* Burt, n. sp.**

Type: in Burt Herb.

Fructifications longitudinally effused, very thin, closely adnate, light drab, not shining, even, the margin thinning out, indeterminate; in section 70–80  $\mu$  thick, light drab, 2-layered, with a layer along the substratum about 30  $\mu$  thick, of densely longitudinally interwoven, somewhat colored hyphae about 3  $\mu$  in diameter, indistinct, conglutinate, and with a colored hymenial layer of erect basidia, paraphyses, and cystidia; no gloeocystidia;

cystidia incrusted, slightly colored, fusiform,  $24-33 \times 12-15 \mu$ , few, immersed in the hymenial layer; spores of a crushed preparation cylindric, hyaline, even, curved,  $8-10 \times 2-3 \mu$ .

Fructifications 3-9 cm. long,  $1-1\frac{1}{2}$  cm. wide.

On bark of dead branches about  $1-1\frac{1}{2}$  cm. in diameter, of frondose species. Louisiana. December.

*P. coloreia* belongs near the *P. cinerea* group of very variable species. It may well prove that *P. coloreia* is not a specifically distinct member of this group when more abundant material from southern Louisiana is available, but it seems to me distinct now by the longitudinal layer next to the substratum, light drab color throughout, few, large, slightly colored cystidia which are confined to the hymenial layer, and by the slender, elongated spores.

Specimens examined:

Louisiana: St. Martinville, A. B. Langlois, *ch*, type.

**114. *P. decorticans* Burt, n. sp.**

Type: in Burt Herb.

Fructifications long-effused, closely adnate, very thin, growing on the wood, spreading longitudinally and laterally between the wood and bark, loosening the latter, pale pinkish buff and pale gull-gray to whitish, pruinose, with occasional tubercles in some specimens; in section brownish throughout,  $50-90 \mu$  thick, not zonate, composed of densely arranged, interwoven, slightly colored, erect hyphae  $3 \mu$  in diameter, with no darker and opaque zone next to the substratum; cystidia few, incrusted, ovoid to subglobose, up to  $20-25 \times 15 \mu$ , seen only in the region next to the substratum; paraphyses with slender, antler-shaped branches protrude from hymenium; spores hyaline, even, slightly curved,  $8-9 \times 3 \mu$ , few seen.

Fructifications 1-2 cm. wide, 2 cm.-6 m. long, on under side of dead branches along which the loosened bark curls back laterally.

On *Quercus Garryana*, *Acer macrophyllum*, and *Rhus diversiloba*. Washington and Oregon. February to December. Common locally.

*P. decorticans* differs from *P. cinerea*, *P. nuda*, *P. caesia*, and *P. violaceo-livida* in not being so dark as to be opaque next to the

substratum. Its most noteworthy character, by which it may be recognized at a glance, is its curious habit of forming the fructification on bark-covered limbs between the bark and the wood, so that the loosened bark—very noticeable on *Quercus* limbs—curls back, disclosing the fructification closely adnate on the wood. The antler-shaped branching paraphyses occur in *P. phyllophida* also.

Specimens examined:

Washington: Bingen, *W. N. Suksdorf*, 910, type, 756, 757, 758.

Oregon: Corvallis, *C. Epling* (in Mo. Bot. Gard. Herb., 60183), *S. M. Zeller*, 1769, 2258 (in Mo. Bot. Gard. Herb., 56846, 63028).

115. *P. nuda* (Fr.) Bresadola, I. R. Accad. Agiati Atti III. 3: 114. 1897; Bourdot & Galzin, Soc. Myc. Fr. Bul. 28: 405. 1913; Rea, Brit. Basid. 695. 1922.

*Thelephora nuda* Fries. Syst. Myc. 1: 447. 1821.—*Corticium nudum* Fries, Epicr. 564. 1838; Patouillard, Tab. Anal. Fung. 2: 33. f. 582. 1887; Sacc. Syll. Fung. 6: 626. 1888.—*Peniophora ochracea* Massee, Linn. Soc. Bot. Jour. 25: 150. 1889, but not *Corticium ochraceum* Fries.

Illustrations: Patouillard, *loc. cit.*

Fructification effused, closely adnate, very thin, pale drab-gray, pale purplish gray or pale gull-gray, pruinose, waxy, cracking in drying; in section brownish, darker and opaque next the substratum, 75–160  $\mu$  thick, the hyphae densely interwoven, rather erect, 3  $\mu$  in diameter, somewhat colored; cystidia incrusting, in all regions of the fructification, usually about 20–25  $\times$  6  $\mu$ , larger near the substratum and sometimes up to 15  $\mu$  in diameter; spores hyaline, even, curved,  $4\frac{1}{2}$ –9  $\times$   $2\frac{1}{2}$ –3  $\mu$ , reported larger by European authors.

Fructifications 2–6  $\times$  1–2 cm.

On fallen limbs of frondose species such as *Acer*, *Quercus*, *Populus*, etc. Canada to Texas, in Europe and Japan. April to January. Occasional.

I have seen no authentic specimens of *P. nuda*, but the European concept of this species differs from *P. cinerea* in having the fructifications more whitish gray in color, more broadly effused,

and less evidently formed by confluence of several small fructifications and with some cystidia near the substratum of greater diameter than those elsewhere. I have seen no spore collections, and it is possible that the spore measurements given above are too small, since they are based on spores found in preparations of sections.

Specimens examined:

Exsiccati: Ravenel, *Fungi Am.*, 454, under the name *Corticium ochraceum*.

Canada: Ottawa, *J. Macoun*, 26.

Vermont: Middlebury, *E. A. Burt*.

New York: Alcove, *C. L. Shear*, 1306; Altamont, *E. A. Burt*.

New Jersey: Newfield, *J. B. Ellis* (in *N. Y. Bot. Gard. Herb.*, and *Mo. Bot. Gard. Herb.*, 61338).

Maryland: Takoma Park, *C. L. Shear*, 1358.

Virginia: *C. L. Shear*, 1181.

South Carolina: Pinopolis, in Ravenel, *Fungi Am.*, 454.

Georgia: Atlanta, *E. Bartholomew*, 8981 (in *Mo. Bot. Gard. Herb.*, 63459).

Florida: Daytona, *R. A. Harper*, 5 (in *Mo. Bot. Gard. Herb.*, 54538).

Alabama: Auburn, *F. S. Earle* (in *N. Y. Bot. Gard. Herb.*, and *Mo. Bot. Gard. Herb.*, 63415).

Louisiana: Baton Rouge, *C. W. Edgerton*, 830.

Texas: Beaumont, *C. J. Humphrey*, 5936.

Japan: Province Bungo, *N. Nakayma*, comm. by *A. Yasuda*, 125 (in *Mo. Bot. Gard. Herb.*, 59471).

**116. *P. argentea* Ellis & Everhart in herb., n. sp.**

Type: in *N. Y. Bot. Gard. Herb.* and *Mo. Bot. Gard. Herb.*

Fructifications effused, closely adnate, thin, pallid mouse-gray to drab-gray, pruinose, cracked in drying, the margin darker and thinning out; in section brown and opaque with exception of the hyaline hymenial layer, 150  $\mu$  thick, with the hyphae densely interwoven, thick-walled, stiff, 3–3½  $\mu$  in diameter, colored as in *Hymenochaete*, not incrustated; cystidia not incrustated, partially destroyed and rendered nearly invisible by potassium hydrate solution, tapering upward to a point, protruding up to 30  $\mu$ ,

6–7  $\mu$  in diameter, often colored for 20  $\mu$  at the base and there with the aspect of buried setae; basidia deteriorated; no spores found.

Fructifications 4–8 cm. long, 1–1½ cm. broad.

On bark and decorticated wood of decaying *Fraxinus*. Louisiana. January. Probably rare.

This species has the color and aspect of *P. nuda* and *P. caesia* but differs from both of these and also from *P. cinerea* in having its opaque basal layer 120  $\mu$  thick, comprising the whole thickness of the fructification except the hymenium, and in having its hyphae thick-walled and distinct and colored as in *Hymenochaete*. The cystidia differ from those of the species just named and also *P. pruinata* in not being incrustated and are noteworthy by being attacked and partially dissolved by 7 per cent solution of potassium hydrate to such a degree that they are best studied when sections are mounted in lactic acid.

Specimens examined:

Louisiana: St. Martinville, A. B. Langlois, 1758, type (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 63416).

117. *P. violaceo-livida* (Sommf.) Bresadola in Bourdot & Galzin, Soc. Myc. Fr. Bul. 28: 405. 1913; Rea, Brit. Basid. 695. 1922.

*Thelephora violaceo-livida* Sommerfelt, Fl. Lapp. Suppl. 283. 1826.—*Corticium violaceo-lividum* (Sommf.) Fries, Epicr. 564. 1838; Hym. Eur. 655. 1874; Sacc. Syll. Fung. 6: 627. 1888.

Fructifications somewhat effused, closely adnate, rather thick, tubercular, pale mouse-gray to drab-gray, often round; in section brownish, 100–300  $\mu$  thick, becoming zonate within, darker and opaque next to the substratum, the hyphae somewhat colored, densely arranged, erect; cystidia incrustated, 20–30  $\times$  6–9  $\mu$ , distributed in all regions, very numerous; spores hyaline, even, curved, 6–9  $\times$  2½–4  $\mu$ , as found with sections.

Fructifications 1–4  $\times$  ½–2 cm., often with the component masses rounded, 5–7 mm. in diameter.

On fallen limbs of *Salix*, *Prunus*, *Fraxinus*, *Castanea*, and *Quercus*. Canada to Louisiana. March to October. Rare.

The concept of this species presented by Bresadola, which has

become generally accepted in Europe, is followed here except that I have referred to this species effused fructifications with tuberculate surface, thick and zonate within, as well as fructifications consisting of aggregations of small, round masses. The specimen received from Bresadola has the latter form and is on *Prunus Cerasus*; one from Romell on *Salix*, the substratum first cited for the species, has a similar zonate structure within and a tubercular surface but is more effused than that from Bresadola.

Specimens examined:

Lapland: *Sommerfelt*, authentic specimen under the name *Thelephora fallax* var. *violaceo-livida* (in Herb. Fries).

Sweden: *L. Romell*, 71.

Austria: Hall in Tirol, *V. Litschauer*.

Italy probably: locality not stated, *G. Bresadola*.

Canada: Ontario, Ottawa, *J. Macoun*, 27, 131.

Vermont: Middlebury, *E. A. Burt*, two gatherings.

Massachusetts: near Boston, *E. A. Burt*.

New Jersey: Newfield, *J. B. Ellis* (in Mo. Bot. Gard. Herb., 61339).

Maryland: Takoma Park, *C. L. Shear*, 1027.

District of Columbia: Soldiers Home, *C. L. Shear*, 1116.

Louisiana: Baton Rouge, *Edgerton & Humphrey*, comm. by C. J. Humphrey, 2521.

- 118. *P. cinerea* (Pers.) Cooke, *Grevillea* 8: 20. *pl.* 123, *f.* 8. 1880; *Sacc. Syll. Fung.* 6: 643. 1888; *Bourdot & Galzin, Soc. Myc. Fr. Bul.* 28: 407. 1913; *Rea, Brit. Basid.*, 696. 1922.

*Corticium cinereum* Persoon, *Roemer Neues Mag. Bot.* 1: 111. 1894; *Fries, Epicr.* 563. 1838; *Hym. Eur.* 654. 1874.—*Thelephora cinerea* § *Corticium* Persoon, *Syn. Fung.* 579. 1801; *Myc. Eur.* 1: 148. 1822; *Fries, Elenchus Fung.* 1: 221. 1828.—*Kneiffia cinerea* (Fr.) *Bresadola, Ann. Myc.* 1: 103. 1903.—*Corticium fumigatum* de Thümen, *Torr. Bot. Club Bul.* 6: 95. 1876; *Myc. Univ.*, 513. 1876.—*Thelephora lilacina* Schweinitz, *Am. Phil. Soc. Trans. N. S.* 4: 168. 1832.—*Peniophora lilacina* (Schw.) *Massee, Linn. Soc. Bot. Jour.* 25: 147. 1889.

Illustrations: *Fries, Icones Hym.*, *pl.* 198, *f.* 4; *Cooke, loc. cit.*; *Patouillard, Tab. Anal. Fung. f.* 251.

Fructifications effused, closely adnate, very thin, in small patches becoming confluent, lurid, ashy in various shades as pale drab-gray, pale mouse-gray, and cinnamon-drab, pruinose, waxy, becoming cracked in drying; in section 50–100  $\mu$  thick usually, brownish, darker and opaque near the substratum, the hyphae densely interwoven, 3  $\mu$  in diameter, somewhat colored; cystidia incrusted, 25–40  $\times$  4½–9  $\mu$ , distributed throughout the section; spores hyaline, even, cylindric, 6–9  $\times$  2–3  $\mu$ , borne 4 to a basidium.

Fructifications 2–5  $\times$  ½–1 cm.; when scattered 2–5 mm. in diameter.

On fallen limbs of *Alnus*, *Acer*, *Prunus*, *Pyrus*, *Quercus*, and most other frondose and coniferous species. Throughout North America, West Indies, Europe, southern Africa, and Japan—probably cosmopolitan. Our commonest species. Throughout the year.

*P. cinerea* may be recognized by its resemblance to a thin coat of ashy gray or slightly tinted paint on the bark of fallen limbs; the substance of the sections is brownish when viewed with a hand lens, and dark and opaque next the substratum under the compound microscope. *P. caesia*, *P. nuda*, and *P. violaceo-livida* must be cautiously separated from *P. cinerea*, for all are closely related.

Specimens examined:

× Exsiccati: Berkeley, Brit. Fungi, 63, 64; Ellis, N. Am. Fungi, 21, under the name *Corticium fumigatum*, 610; Ell. & Ev., Fungi Col., 610, 805, under the name *C. fumigatum*; de Thümen, Myc. Univ., 513, type distribution of *C. fumigatum*, 1206; Sydow, Myc. Germ., 205.

Sweden: L. Romell, 69, 70.

England: in Berkeley, Brit. Fungi, 63, 64; Kew Gardens, E. M. Wakefield (in Mo. Bot. Gard. Herb., 57121).

Germany: Brandenburg, in Sydow, Myc. Germ., 205; Berlin, *P. Magnus* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55803).

Austria: Lengerich, Brinkmann, comm. by G. Bresadola; Tirol, three specimens, comm. by V. Litschauer.

Italy: Trento, G. Bresadola; Vallambrosa, Cavara, comm. by G. Bresadola.

- Newfoundland: Bay of Islands, *A. C. Waghorne*, 989 (in Mo. Bot. Gard. Herb., 5009).
- Canada: *J. Macoun*, 8, 9, 50.
- Quebec: Hull, *J. Macoun*.
- Ontario: London, *J. Dearness*, 169a, 169c (in Mo. Bot. Gard. Herb., 11350, 5629); Ottawa, *J. Macoun*, 334.
- Maine: Portage, *L. W. Riddle*.
- New Hampshire: Chocorua, *W. G. Farlow*, 147 (in Mo. Bot. Gard. Herb., 55262) and three specimens in Burt Herb.; North Conway, *A. S. Rhoads*, 8 (in Mo. Bot. Gard. Herb., 56977), *W. H. Snell*, 627 (in Mo. Bot. Gard. Herb., 59294).
- Vermont: Middlebury, *E. A. Burt*, nine gatherings.
- Massachusetts: Arlington, *E. A. Burt*, *A. P. D. Piguet*, comm. by *W. G. Farlow* (in Mo. Bot. Gard. Herb., 43959); Billerica, *E. A. Siegler* (in Mo. Bot. Gard. Herb., 55035); Boston, *E. A. Burt*; Stoneham, *C. L. Shear*, 1239.
- Connecticut: Portland, *G. P. Clinton* (in Mo. Bot. Gard. Herb., 43945).
- New York: Albany, *H. D. House* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 15955, 57517, 59673, 59690, 59695), *L. O. Overholts*, 3388 (in Mo. Bot. Gard. Herb., 6989), *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55987, 57516, 57518); Alcove, *C. L. Shear*, 248, 1006, 1100, 1138, 1216, 1300; Carrollton, *C. H. Peck* (in Mo. Bot. Gard. Herb., 56012); East Galway, *E. A. Burt*; Greenbush, *C. H. Peck* (in N. Y. State Mus. Herb., 74, and Mo. Bot. Gard. Herb., 55776); Hudson Falls, *S. H. Burnham*, 19 (in Mo. Bot. Gard. Herb., 54504); Ithaca, *G. F. Atkinson*, 674, 8218, *H. S. Jackson*, Cornell Univ. Herb., 14394, *C. O. Smith*, comm. by *G. F. Atkinson*, 8223; Karner, *H. D. House* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 54369); Knox, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55751); Menands, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55805); Middle Grove, *E. A. Burt*; Van Cortland Park, New York City, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55977); Orient, *R. Latham*, 181 (in Mo. Bot. Gard. Herb., 44227); Selkirk, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard.

- Herb., 55773); Van Etten, Tioga County, *W. C. Barbour*, 1365 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61400); West Albany, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55749); Westport, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55750); White Plains, *L. M. Underwood* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61588); Willsboro Point, *C. O. Smith*; West Fort Ann, *S. H. Burnham*, 17 (in Mo. Bot. Gard. Herb., 44046).
- New Jersey: Newark, *H. S. Jackson*; Newfield, *J. B. Ellis* (in Mo. Bot. Gard. Herb., 4818), 1076, 1078, comm. by *W. G. Farlow* (in Mo. Bot. Gard. Herb., 14762, 7459), comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 61448), in *Ellis*, N. Am. Fungi, 21, 610, in *Ell. & Ev.*, Fungi Col., 610, 805, and *de Thümen*, Myc. Univ., 513, 1206; Belleplain, *C. L. Shear*, 1165.
- Pennsylvania: Bethlehem, *Schweinitz*, type of *Thelephora lilacina* (in *Farlow* Herb. and *Kew* Herb.).
- Maryland: Takoma Park, *C. L. Shear*, 962, 1028, 1076, 1162, 1349.
- District of Columbia: Takoma Park, *C. L. Shear*, 515 (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55808), 1353; Washington, *C. L. Shear*, 1200, 1258.
- Virginia: Park Lane, *W. H. Long*, 18509 (in Mo. Bot. Gard. Herb., 55061).
- North Carolina: Blowing Rock, *G. F. Atkinson*, 4328, 8030.
- Georgia: Atlanta, *E. Bartholomew*, 5676 (in Mo. Bot. Gard. Herb., 44252).
- Florida: New Smyrna, *W. A. Merrill*, 5, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 62085).
- Alabama: Auburn, *F. S. Earle*, unnumbered specimens and 42 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61399, 61452), and *F. S. Earle & C. F. Baker* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61428); Montgomery and Montgomery County, *R. P. Burke*, 9, 11, 42, 120, 449, 455, 458, 461, 469, 513, 818 (in Mo. Bot. Gard. Herb., 16360, 22340, 21100, 19555, 57277, 57280, 57283, 57288, 57303, 63117).
- Louisiana: Baton Rouge, *Edgerton & Humphrey*, 5727a, 5666.
- Tennessee: *J. R. Weir*, 7558 (in Mo. Bot. Gard. Herb., 55464).

Ohio: Norwood, *C. G. Lloyd*, 1576.

Indiana: Crawfordsville, *A. R. Bechtel*, 12 (in *Mo. Bot. Gard. Herb.*, 59660); Millers, *E. T. & S. A. Harper*, 939.

Illinois: Barry, *H. W. Anderson* (in *Mo. Bot. Gard. Herb.*, 55966); Cypress, *C. J. Humphrey*, 1359 (in *Mo. Bot. Gard. Herb.*, 22522); River Forest, *E. T. & S. A. Harper*, 676, 757; Riverside, *E. T. & S. A. Harper*, 677.

Michigan: Ann Arbor, *C. H. Kauffman* (in *N. Y. Bot. Gard. Herb.*, and *Mo. Bot. Gard. Herb.*, 61396); Gogebic County, *E. A. Bessey*, 56, 78, 183, 216, 236, 371 (in *Mo. Bot. Gard. Herb.*, 56545, 56549, 56580, 56546, 56590, 56635); Michigan Agricultural College, *B. O. Longyear* (in *Mo. Bot. Gard. Herb.*, 55704); New Richmond, *E. W. Hartwell* (in *Mo. Bot. Gard. Herb.*, 58163); Vermilion, *A. H. W. Povah*, 242 (in *Mo. Bot. Gard. Herb.*, 58163).

Wisconsin: Blue Mounds, comm. by *Univ. Wis. Herb.*, 28; Madison, *E. Bartholomew* 6652 (in *Mo. Bot. Gard. Herb.*, 57039), *M. C. Jensen*, comm. by *C. J. Humphrey*, 2432 (in *Mo. Bot. Gard. Herb.*, 4835), and *W. Trelease* (in *Mo. Bot. Gard. Herb.*, 4816, 43988, 43989).

Minnesota: Lake Itaska, *E. L. Jensen*, 5 (in *Mo. Bot. Gard. Herb.*, 12530); Univ. Farm Campus, St. Paul, *E. L. Jensen*, 3 (in *Mo. Bot. Gard. Herb.*, 4203).

Missouri: Columbia, *B. M. Duggar*, 572, 574; Creve Coeur Lake, *L. O. Overholts*, 3159 (in *Mo. Bot. Gard. Herb.*, 5714).

Nebraska: Lincoln, *C. L. Shear*, 1054, 1058, 1342.

Colorado: Golden, *E. Bethel & L. O. Overholts*, 1744 (in *Mo. Bot. Gard. Herb.*, 54870).

Manitoba: Winnipeg, *A. H. R. Buller*, comm. by *G. R. Bisby*, 878, and *G. R. Bisby*, 1348 (in *Mo. Bot. Gard. Herb.*, 58995, and 60554 respectively).

British Columbia: Salmo, *J. R. Weir*, 444 (in *Mo. Bot. Gard. Herb.*, 6243); Sidney, *J. Macoun*, 6, 775 (in *Mo. Bot. Gard. Herb.*, 5765, 55324).

Washington: Bingen, *W. N. Suksdorf*, 700, 701, 721, 744, 759, 861, 885, 918, 954, 960, 963; Corvallis, *S. M. Zeller*, 2262 (in *Mo. Bot. Gard. Herb.*, 63033); Chelan, *J. R. Weir*, 5490 (in *Mo. Bot. Gard. Herb.*, 58260); Kalama, *C. J. Humphrey*, 6219;

- Washougal, *R. H. Turk*, comm. by S. M. Zeller, 2630 (in Mo. Bot. Gard. Herb., 63057).
- California: Berkeley, comm. by W. A. Setchell, 1032 (in Mo. Bot. Gard. Herb., 44241); Stanford University, *C. F. Baker*, 12; Sierra Nevada Mountains, *W. H. Harkness*, 1025 (in Kew Herb., under the name *Peniophora carnea* Berk. & Cke.).
- Mexico: Guernavaca, *W. A. & E. L. Merrill*, 358, 407 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 54470, 54532).
- Cuba: San Antonio de los Baños, Havana Province, *Earle & Merrill*, 73, comm. by N. Y. Bot. Gard. Herb.
- Porto Rico: Rio Piedras, *J. A. Stevenson*, 2451, 2920, 3067, 5581, 5638 (in Mo. Bot. Gard. Herb., 9185, 3125, 9055, 6957, 54585).
- Jamaica: Chester Vale, *W. A. & E. L. Merrill*, 334, comm. by N. Y. Bot. Gard. Herb.; Cinchona, *W. A. & E. L. Merrill*, 596, comm. by N. Y. Bot. Gard. Herb.; Troy and Tyre, *W. A. & E. L. Merrill*, 894, comm. by N. Y. Bot. Gard. Herb.
- Africa: Stellenbosch, Cape Colony, *P. A. van der Bijl*, 326 (in Mo. Bot. Gard. Herb., 63397).
- Japan: Mt. Mikuma, Province Awaji, *A. Yasuda*, 4 (in Mo. Bot. Gard. Herb., 55666).

**119. *P. caesia*** Bresadola in Bourdot & Galzin, Soc. Myc. Fr. Bul. 28: 406. 1913; Rea, Brit. Basid., 695. 1922.

*Corticium caesium* Bresadola, Fungi Trid. 2: 39. pl. 145, f. 2. 1892; Sacc. Syll. Fung. 11: 126. 1895.

Illustrations: Bresadola, *loc. cit.*

Type: authentic specimen in Burt Herbarium.

Fructifications broadly effused, closely adnate, very thin, pale mouse-gray to pale purplish-gray, delicately pruinose, cracked in drying, the margin similar; in section brownish, 40–90  $\mu$  thick, dark and opaque next to substratum; hyphae densely interwoven, somewhat colored; cystidia near the substratum 15–25  $\times$  10–20  $\mu$ , incrusted, becoming slightly colored, not numerous; spores hyaline, even, curved, 6–8  $\times$  2½–3  $\mu$  as found in preparations of sections, probably larger in spore falls.

Fructifications 2–10  $\times$  1–2 cm.

On fallen limbs of *Syringa*, *Betula*, *Quercus*, and other frondose

species. Vermont to District of Columbia, in Missouri, and in Europe. March to December. Rare.

*P. caesia* is more widely effused than *P. cinerea*, is not formed by confluence of many small fructifications, and has much the color and aspect of *P. nuda* but differs from the latter in absence of the numerous, small cystidia.

Specimens examined:

Exsiccati: Roumeguère, Fungi Gallici, 2910, under the name

*Corticium incarnatum*, 3213, under the name *Corticium cinereum*.

Austria: Vienna, comm. by V. Litschauer.

Italy: Trient, G. Bresadola, authentic specimen.

France: in Roumeguère, Fungi Gallici, 2910, 3213.

Vermont: Lake Dunmore, E. A. Burt.

District of Columbia: Washington, Department Grounds, on *Syringa vulgaris*, C. L. Shear, 1264, in part, and an unnumbered specimen.

Missouri: Columbia, B. M. Duggar, 448.

120. *P. carnea* (Berk. & Cooke) Cooke, Grevillea 8: 21. pl. 124, f. 11. 1879; Sacc. Syll. Fung. 6: 644. 1888; Masee, Linn. Soc. Bot. Jour. 25: 151. 1889.

*Corticium carneum* Berkeley & Cooke, New York Acad. Sci. Ann. 1: 179. 1878; Linn. Soc. Bot. Jour. 17: 141. 1878.

Type: in Kew Herb.

Fructification effused, closely adnate, thin, ochraceous flesh-color, drying avellaneous and cracked, the margin whitish and fibrillose; in section brownish, 100–120  $\mu$  thick, with a dark, semi-opaque zone next to the substratum; hyphae densely interwoven, 3–3½  $\mu$  in diameter, slightly colored, somewhat longitudinally interwoven next to the substratum; cystidia incrusted, of two kinds—very large cystidia resembling conical or subglobose crystalline masses 45–75  $\times$  30–75  $\mu$  are seated on the opaque zone, other cystidia 25–35  $\times$  6–8  $\mu$  are scattered throughout the region between the dark zone and the surface of the hymenium; gloeocystidia flexuous, 40–50  $\times$  4–4½  $\mu$ , not numerous; spores hyaline, even, slightly curved, 8–12  $\times$  3–4  $\mu$ .

Fructifications 1–6 cm. long, ½–2 cm. broad.

On logs and fallen, decaying, frondose limbs. Texas and Cuba. March. Rare.

The thin, closely adnate fructifications of *P. carnea*, brownish within and with a broad, dark, opaque zone next to the substratum, place this species in the *P. cinerea* group. It is remarkable by having, in addition to the ordinary kind of cystidia, very much larger cystidia which finally become, by the accretions of mineral matter, very large masses of mineral nature with very coarse grains on the exterior of the mass. In the Cuban gathering which I have referred to this species, when a small portion of the hymenial surface was moistened with alcohol and then with water preparatory to removal of a bit of the fructification for sectioning, the moist hymenium became punctate with minute depressions, probably by presence at those points of the large buried cystidia. This may prove a useful test for preliminary sorting out, without examination by the microscope, of the rare *P. carnea* from the more common *P. cinerea* of nearly similar aspect. *P. heterocystidia* has cystidia of two kinds, like those of *P. carnea* but thicker, readily separable from the substratum when moistened, and with a narrow brown zone in the middle of its sectional preparations and with a loosely interwoven hyaline zone next to the substratum. The specimen in Kew Herbarium, collected on fir in the Sierra Nevada Mountains, California, by Harkness, 1025, and referred by Cooke to *P. cinerea* does not have the large cystidia of his type and is *P. cinerea* instead.

Specimens examined:

Texas: Galveston Bay, *H. W. Ravenel*, 78, type (in Kew Herb.).

Cuba: San Diego de los Baños, Pinar del Rio Province, *Earle & Merrill*, 333, comm. by N. Y. Bot. Gard. Herb.

SPECIES TOO INCOMPLETELY DESCRIBED FOR LOCATION AMONG  
PRECEDING SPECIES

*Peniophora convolvens* Bresadola, Ann. Myc. 18: 48. 1920.

"Elongato-effusa, ceraceo-membranacea, pallida vel avellanea, ambitu similari, demum libero-convoluto; hymenio demum late rimoso, interstitiis fibrillosis; sporis hyalinis, obovatis,  $6-7 \times 5-6 \mu$ ; basidiis clavatis,  $40-45 \times 6-7 \mu$ ; cystidiis saepe immersis vel usque ad  $45 \mu$  prominentibus,  $9-12 \mu$  crassis.

"Hab. ad ligna, St. Croix, Americae centralis. *Raunkiaer*."

*P. gigaspora* Masee, Linn. Soc. Bot. Jour. **25**: 152. 1889; Sacc. Syll. Fung. **9**: 238. 1891.

"Latissime effusa, ambitu fimbriata albicans; hymenio pallido, velutino, sicco indurato, contiguo; cystidia fusioidea, 80-120  $\times$  30-40  $\mu$ ; sporae oblongo-ellipsoideae, 18-20  $\times$  10  $\mu$ .

"N. Providence, Bahamas.

"On decorticated wood, forming thin, continuous, broadly effused patches, somewhat resembling *P. velutina*, but differing in cystidia and spores."

(To be concluded)

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The Thelephoraceae of North  
America. XV

Corticium

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EDWARD ANGUS BURT

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## THE THELEPHORACEAE OF NORTH AMERICA. XV<sup>1</sup>

(CONCLUSION, WITH SUPPLEMENT AND GENERAL INDEX)

EDWARD ANGUS BURT

*Mycologist and Librarian to the Missouri Botanical Garden*

### CORTICIUM

*Corticium* Persoon, Roemer Neues Mag. Bot. 1: 110. 1794; Obs. Myc. 1: 37. 1796; Fries, Gen. Hym. 15. 1836; Epicr. 556. 1838; Hym. Eur. 646. 1874; Berkeley, Outl. Brit. Fung. 272. 1860; Morgan, Cincinnati Soc. Nat. Hist. Jour. 10: 198. 1888; Sacc. Syll. Fung. 6: 603. 1888; Karsten, Vet.-Soc. Bidrag Natur och Folk 48: 408. 1889; Massee, Linn. Soc. Bot. Jour. 27: 117. 1890; Bresadola, I. R. Accad. Agiati Atti III. 2: 110. 1897; Ann. Myc. 1: 93. 1903; Engl. & Prantl, Nat. Pflanzenfam. (I: 1<sup>\*\*</sup>): 118. 1898; Bourdot & Galzin, Soc. Myc. Fr. Bul. 27: 224. 1911; Rea, Brit. Basid. 14, 672. 1922.—Includes *Gloeocystidium* v. Höhnelt & Litschauer, Weisner Festschr. Wien, 58. 1908, and Bourdot & Galzin, Soc. Myc. Fr. Bul. 28: 354. 1913.—Not *Gloeocystidium* Karsten, Finska Vet.-Soc. Bidrag Natur och Folk 48: 429. 1889. See Burt, Mo. Bot. Gard. Ann. 12: 247. 1926.—Includes *Vararia* Karsten, Finska Vet.-Soc. Bidrag Natur och Folk 52: 96. 1898; *Asterostromella* v. Höhnelt & Litschauer, K. Akad. Wiss. Wien Sitzungsber. 116: 773. 1907; Weisner Festschr. Wien, 58. 1908; Bourdot & Galzin, Soc. Myc. Fr. Bul. 27: 265. 1911.—Includes *Xerocarpus* and *Lyomyces* of Karsten, Finska Vet.-Soc. Bidrag Natur och Folk 48: 417, 418. 1889.—Includes in part *Hypochnus* Sacc. Syll. Fung. 6: 653. 1888, and Engl. & Prantl, Nat. Pflanzenfam. (I: 1<sup>\*\*</sup>): 116. 1898.—Not *Hypochnus* Fries emend. Karsten, Rev. Myc. 3<sup>o</sup>: 23. 1881. See Burt, Mo. Bot. Gard. Ann. 3: 203. 1916.

<sup>1</sup> Issued September 20, 1926.

Fructifications waxy, crustaceous or floccose, fleshy, cartilaginous, coriaceous or membranaceous, always resupinate, effused; hymenium even, or somewhat tubercular in a few species; basidia simple with 2-8 sterigmata, usually 4, the sterigmata not greatly thickened; basidiospores white, even—green in *C. atrovirens*; substance variously differentiated but not containing colored, stellate organs. Distinguished from *Peniophora* by not having cystidia.

The species described as belonging in *Corticium* upon publication of the genus are *Corticium polygonium*, *C. laeve*, *C. roseum*, *C. Sambuci*, *C. cinereum*, and *C. aurantium*, in the order given, no one of which was designated as the type species. *C. Sambuci* and *C. cinereum* are now included in *Peniophora* and *C. aurantium* in *Aleurodiscus*.

Von Höhnelt and Litschauer and Bourdot and Galzin have segregated under *Gloeocystidium* Karsten all species of *Corticium* which have gloeocystidia. I have not followed them in this, because I regard gloeocystidia as but one of the several differentiations of tissue which afford helpful distinctive characters for recognition of the species of this genus. In fact, I feel that closer observation of the tissues and structure of the fructification and accurate record of such structure should give important, and often decisive, characters of all the species. My own study has already gone so far in this direction that I attach but slight regard to a specific determination which is based merely upon obvious external characters and the substratum upon which growing. A sufficient objection to *Gloeocystidium* for the species which have gloeocystidia is that one of the two species upon which Karsten founded the genus is *Peniophora guttulifera*, a true *Peniophora* with no gloeocystidia whatever, and the other is *Odontia sudans*.

*Asterostromella* as a genus to include *Corticium investiens*, a species with helpful hyphal differentiation, is antedated by Karsten's *Vararia*, having *C. investiens* as its type species.

What was shown in the preceding part about the distribution of our species of *Peniophora* is true also for *Corticium*. Of the 107 species of *Corticium* herein presented, 46 are described as new species. The color of the exterior of the fructification and of its internal substance and the presence of tissues of somewhat unusual form have afforded a basis for the arrangement of our

species into 4 workable groups nearly equal in numbers, as presented in the following key to the species. Each of these groups is subdivided to such degree as seems desirable—largely by spore characters—into minor groups of so few species that the characters of the component species of any group may, and should, all be considered in determining the probable species of the specimen in course of identification. The extensive lists of specimens studied, with their localities where collected, and present preservation in published exsiccati and herbaria, afford material for checking up one's own determinations. Determinations as published should correct earlier tentative determinations communicated to my correspondents.

Throughout this work technical color terms are those of Ridgway's 'Color Standards and Nomenclature.' There was little knowledge available as to the color of specimens when growing, but since the time-consuming task of determination is usually with dried specimens collected many years ago and often more or less faded or yellowed, my record of the color of the dried specimens should be the more helpful to the chief users of this work.

Accounts of the species of the genera *Tremellodendron*, *Eichleriella*, *Sebacina* and *Septobasidium* were included to set off more sharply the true *Thelephoraceae* to which the species of these four genera are so similar in aspect that they were commonly known under their original names as species of *Thelephoraceae*. By treating these genera and *Lachnocladium* in the present work, the student had at hand a systematic account of all North American fungi of thelephoraceous aspect. The matter on those genera could otherwise have been included in my recent publications: 'Some North American Tremellaceae, Dacryomycetaceae and Auriculariaceae' and 'North American species of *Clavaria*.'

To all whose names have been recorded as collectors and contributors of specimens and to botanical institutions whose specimens are cited and which have afforded me facilities for the study of their herbaria I am deeply indebted. Without their aid but little could have been done.

## KEY TO THE SPECIES

- I. Substance not appreciably colored, no gloecystidia.
1. Hymenium white or whitish when growing. . . . . 1-23
    - \*With antler-shaped paraphyses or color change from yellow to white in fruiting. . . . . 1, 2
    - \*\*Spores globose or subglobose.
      - a. Imbedded spores (chlamydospores) usually present. . . . . 3, 4
      - b. Imbedded spores not yet observed. . . . . 5-9
    - \*\*\*Spores more elongated.
      - a. Spores large, more than 6  $\mu$  long. . . . . 10, 11, 33
      - b. Spores small, hyphae incrustated or among obscuring mineral matter. . . . . 12-16
      - c. Spores small, hyphae not incrustated. . . . . 15-23
  2. Hymenium colored when dry and not known to be white at first—usually some shade of buff, yellow, red, brown or blue. . . . . 24-56
    - \*Spores globose or subglobose, less than 5  $\mu$  in diameter. . . . . 24-26
    - \*\*Spores globose or subglobose, more than 5  $\mu$  in diameter. . . . . 27-29
    - \*\*\*Spores more elongated.
      - a. Spores very large, 10-18  $\mu$  long. . . . . 30, 31
      - b. Spores large, 6-12  $\mu$  long. . . . . 32-44, 90
      - c. Spores small, hyphae somewhat incrustated. . . . . 12, 45-48
      - d. Spores small, hyphae not incrustated, fructifications separable. . . . . 49
      - e. Spores small, hyphae not incrustated, fructifications closely adnate or only small pieces separable. . . . . 50-56
- II. Gloecystidia present or structure vesicular, or some tissue noteworthy, substance colored or not colored.
- \*Gloecystidia present or shown by vesicular structure or by colored, resinous-appearing masses. . . . . 57-86, 107
    - a. Gloecystidia not colored, elongated, imbedded spores numerous. . . . . 57-58
    - b. Gloecystidia not colored, elongated, lacking chlamydospores.
      - †Spores globose, subglobose or broadly ovoid. . . . . 59-66
      - ††Spores more elongated. . . . . 66-71, 79
    - c. Gloecystidia not colored, pyriform to globose. . . . . 72-79
    - d. Gloecystidia colored, elongated. . . . . 80-83
    - e. Gloecystidia colored, subangular or globose, resinous-appearing. . . . . 66, 84-86
  - \*\*Distinguished by antler-shaped branching of some hyphae or paraphyses, or other branching of paraphyses, or unusual form of other tissues. . . . . 1, 17, 23, 29, 36, 33-40, 60, 72, 76, 80, 87, 88, 92-94, 107
  - \*\*\*Numerous imbedded spores or other than basidiospores. . . . . 3, 4, 11, 37, 57, 58
  - \*\*\*\*Spores green, even. . . . . 105
  - \*\*\*\*\*Spores usually white but finally becoming ochraceous. . . . . 34
- III. Substance colored, no gloecystidia. . . . . 87-106
- \*Fructifications ranging from gray to drab.
    - a. With paraphyses having slender branches, spores small. . . . . 87, 88
    - b. Paraphyses not noteworthy, spores larger, 7-10  $\mu$  long. . . . . 89-91
  - \*\*Fructifications ochraceous to wax-yellow and red.

- a. With some hyphae or paraphyses having antler-shaped or racemose branching. . . . . 92-94
- b. Tissues not having antler-shaped or racemose branching. . . . 2, 95-99
- \*\*\*Fructifications darker, tending to brown and vinaceous.
  - a. Parasitic species. . . . . 100-102
  - b. Always saprophytic. . . . . 103, 104
- \*\*\*\*Fructifications green or blue. . . . . 105, 106

# 1. *Corticium paraphysatum* Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructifications effused, thin, closely adnate, white to pale cartridge-buff in the herbarium, even, velutinous, not shining, not cracked, the margin similar, thinning out; in section 45-75  $\mu$  thick, not colored, composed of somewhat scattered, deeply staining, clavate organs—probably basidia—immersed among great numbers of slender, erect, non-staining, branching organs which approach antler-form in branching and form the layer of paraphyses at the surface of the hymenium; no gloecystidia; no basidia bearing sterigmata nor spores found.

Fructifications 1-5 cm. long,  $\frac{1}{2}$ -2 $\frac{1}{2}$  cm. wide. Small fructifications become confluent.

Beneath prostrate, decaying, hardwood limbs of a frondose species. Cuba. Still immature in December.

Although the specimens at hand of *C. paraphysatum* are still so immature that it has not been possible to demonstrate their mature basidia and spores, the species is distinct from others of the genera *Aleurodiscus*, *Sebacina*, and *Corticium* which are known to me. It should be readily recognizable by its thin, closely adnate, white fructifications on small hardwood limbs and by the abundance of the non-staining paraphyses.

Specimens examined:

Cuba: Ceballos, *C. J. Humphrey*, 2848, type, and 2776, 2800 (in Mo. Bot. Gard. Herb., 63769, 63768, and 63770 respectively), and 2586; Omaja, *C. J. Humphrey*, 2698 (in Mo. Bot. Gard. Herb., 43063).

2. *C. sulphureum* Fries, *Epier.* 561. 1838; *Hym. Eur.* 650. 1874; Berkeley, *Outl. Brit. Fung.* 274. 1860; Sacc. *Syll. Fung.* 6: 612. 1888.

*Thelephora sulphurea* Fries, *Syst. Mey.* 1: 452. 1821; *Elenchus*

Fung. 1: 204. 1828.—*Corticium croceum* Bresadola, I. R. Accad. Agiati Atti III. 3: 112. 1897; Bourdot & Galzin, Soc. Myc. Fr. Bul. 27: 242. 1911; Rea, Brit. Basid. 676. 1922.—An *Sporotrichum croceum* Kunze & Schmidt, Myk. Heft. 1: 81. 1817?—Not *Corticium sulphureum* Persoon, which is a synonym of *Hypochnus fumosus* Fries. See Burt, Mo. Bot. Gard. Ann. 3: 239. 1916.

Type: authentic specimen in Kew Herb.

Fructifications effused, fibrillose-bysoid, sulphur-yellow to wax-yellow when a sterile mycelium, becoming whitish throughout when forming the hymenium, the margin yellow or whitish, running out into sulphur-yellow to wax-yellow branching rhizomorphic strands; when fertile 200–300  $\mu$  thick in section, not appreciably colored, the hyphae loosely arranged, ascending, branching,  $2\frac{1}{2}$   $\mu$  in diameter, rough-walled or somewhat incrustated with small crystals; no gloeocystidia; spores hyaline, even,  $3 \times 2$   $\mu$ , copious.

Fructifications 3–10 cm. long, 2–4 cm. wide.

Under side of decaying *Fagus* and other species. Europe, Maryland, Missouri, Montana, and Idaho. Common in Europe but rare in North America. August to October.

The mycelium of *C. sulphureum* is conspicuous by its brilliant wax-yellow color, but in fruiting this yellow color is lost throughout the fructification, persisting only about the margin and in the rhizomorphic strands. By this curious character and by the pruinose or velvety hymenium one may distinguish *C. sulphureum* from *C. bicolor*. The International Botanical Rules afford no ground for the displacement by Bresadola of the well-established name *Corticium sulphureum* by *C. croceum*.

Specimens examined:

Sweden: authentic specimen from E. Fries (in Kew Herb.); Femsjö, E. A. Burt, 2 gatherings; Stockholm, L. Romell, 151, 152.

Germany: Brinkmann, comm. by G. Bresadola.

Austria: Innsbruck, V. Litschauer; Tirol, V. Litschauer.

Maryland: Takoma Park, C. L. Shear, 1069.

Missouri: Meramec Highlands, F. P. McWhorter (in Mo. Bot. Gard. Herb., 57359).

Montana: Bernice, *E. E. Hubert*, comm. by J. R. Weir, 12008 (in Mo. Bot. Gard. Herb., 63368).

Idaho: Priest River, *E. E. Hubert*, comm. by J. R. Weir, 12021 (in Mo. Bot. Gard. Herb., 63376).

3. *C. punctulatum* Cooke, *Grevillea* 6: 132. 1878; Sacc. Syll. Fung. 6: 614. 1888; Masee, Linn. Soc. Bot. Jour. 27: 129. 1890.

Type: type distribution in Ravenel, *Fungi Am.*, 128.

Fructifications broadly effused, thin, somewhat hypochnoid, only fragments separable, white at first, becoming between pinkish buff and cream-color in the herbarium, punctulate at first, at length even and continuous in spots, fibrillose, the margin thinning out, concolorous, indeterminate; in section about  $135\ \mu$  thick, not colored, with hyphae loosely interwoven,  $4-4\frac{1}{2}\ \mu$  in diameter, not incrustated, occasionally nodose-septate; no gloeocystidia; spores imbedded in all regions of the fructification are probably chlamydospores; basidia bearing sterigmata or spores not demonstrated; spores at surface of hymenium hyaline, even, perhaps becoming minutely rough,  $6 \times 4\frac{1}{2}-5\ \mu$ , copious.

Fructifications up to 6 cm. long, 1-2 cm. wide.

On rotten pine logs and on small splinters and rubbish consolidated by the mycelium. New Jersey and South Carolina.

The punctulate hymenium of *C. punctulatum* is distinctive in the several specimens from the original collection now in three herbaria; the presence of imbedded spores in all regions of the fructification should prove another helpful character for the recognition of this species.

Specimens examined:

Exsiccati: Ravenel, *Fungi Am.*, 128.

New Jersey: Belleplain, *C. L. Shear*, 1248.

South Carolina: Aiken, *H. W. Ravenel*, 2334, type (in Kew Herb. and in Ravenel, *Fungi Am.*, 128).

4. *C. vellereum* Ellis & Cragin, *Jour. Myc.* 1: 58. 1885; Sacc. Syll. Fung. 6: 615. 1888; Masee, Linn. Soc. Bot. Jour. 27: 137. 1890; Wakefield, *Brit. Myc. Soc. Trans.* 5: 128. 1914.

*Corticium Bresadolae* Bourdot, *Rev. Sci. Bourb.* 23: 6. 1910; Bourdot & Galzin, *Soc. Myc. Fr. Bul.* 27: 233. 1911.

prob. l. g. *C. albo-striatum*  
gleocystidia are present!

Type: in N. Y. Bot. Gard. Herb.

Fructifications widely effused, adnate, rather thick, tender, small pieces separable when moistened, white, cream-buff or pinkish buff, even, pulverulent or waxy, rarely cracked, the margin white, byssoid; in section 200–500  $\mu$  thick, not colored, composed of loosely interwoven, thin-walled, nodose-septate hyphae 3–5  $\mu$  in diameter and usually numerous chlamydospores; no gloeocystidia; basidiospores white in spore collection, even, subglobose,  $5-7 \times 4\frac{1}{2}-6 \mu$ ; chlamydospores of about the same dimensions.

Fructifications 3–10 cm. in diameter.

On bark and wood of frondose species decaying on the ground. In Europe, from Canada to Texas, westward to British Columbia and California, and in Mexico and Japan. July to March. Common.

*C. vellereum* is distinguished among our species of *Corticium* by the presence usually of very numerous chlamydospores and by the absence of gloeocystidia. This is true of *C. punctulatum*, but the latter is more hypochnoid in surface and occurs on pine.

Specimens examined:

Sweden: L. Romell, 404.

France: St. Priest, H. Bourdot, 15749, authentic specimen of *C. Bresadolae*.

England: Winchester, F. Escombe, comm. by E. M. Wakefield (in Mo. Bot. Gard. Herb., 4038).

Canada: J. Macoun, 652, comm. by W. G. Farlow (in Mo. Bot. Gard. Herb., 7457); Ottawa, J. Macoun, 8, 43, 180, and 281 (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 57455); St. Lawrence Valley, J. Macoun, 25.

New Hampshire: Chocorua, E. A. Burt.

Vermont: Middlebury, E. A. Burt; Abby Pond, Ripton, E. A. Burt.

Massachusetts: Magnolia, W. G. Farlow.

New York: Albany, H. D. House (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 59689); Hudson Falls, S. H. Burnham, 13 (in Mo. Bot. Gard. Herb., 44004); Ithaca, G. F. Atkinson, 22971; Jordan, E. Brown, 179 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61451); Van Cortland Park, New York

- City, *W. A. Murrill* (in *N. Y. Bot. Gard. Herb.*, and *Mo. Bot. Gard. Herb.*, 61429); Westport, *C. H. Peck*, 2 (in *N. Y. State Mus. Herb.*, T 24, and *Mo. Bot. Gard. Herb.*, 56070).
- Pennsylvania: State College, *L. O. Overholts*, 4811 (in *Mo. Bot. Gard. Herb.*, 56125).
- Georgia: Savannah, *C. J. Humphrey*, 5109 (in *Mo. Bot. Gard. Herb.*, 11953).
- Alabama: Auburn, *F. S. Earle*, 115 (in *N. Y. Bot. Gard. Herb.*, and *Mo. Bot. Gard. Herb.*, 61561).
- Texas: Quitman, *W. H. Long*, comm. by *C. J. Humphrey*, 2545 (in *Mo. Bot. Gard. Herb.*, 9920).
- Ohio: *C. G. Lloyd*, 3738, 3825; Linwood, *C. G. Lloyd*, 1880.
- Michigan: Ann Arbor, *C. H. Kauffman*, 11, 16.
- Wisconsin: Superior, *C. J. Humphrey*, 1548 (in *Mo. Bot. Gard. Herb.*, 10744).
- Illinois: River Forest, *E. T. & S. A. Harper*, 627, 629.
- Missouri: Upper Creve Coeur, *E. A. Burt* (in *Mo. Bot. Gard. Herb.*, 58345); St. Louis, *S. M. Zeller* (in *Mo. Bot. Gard. Herb.*, 55642); Valley Park, *E. A. Burt* (in *Mo. Bot. Gard. Herb.*, 44074).
- Kansas: Rooks County, *E. Bartholomew*, 2 specimens under the herbarium name *C. globiferum* (in *Burt Herb.*, and *Mo. Bot. Gard. Herb.*, 4848, 4849); Strong City, *G. G. Hedgcock*, comm. by *C. J. Humphrey*, 2541 (in *Mo. Bot. Gard. Herb.*, 11043); Topeka, *F. W. Cragin*, 560, type, 583 (in *N. Y. Bot. Gard. Herb.*).
- South Dakota: Black Hills, *J. R. Weir*, 10014 (in *Mo. Bot. Gard. Herb.*, 55795).
- Idaho: Priest River, *E. E. Hubert*, comm. by *J. R. Weir*, 11633 (in *Mo. Bot. Gard. Herb.*, 63306).
- Manitoba: Winnipeg, *A. H. R. Buller*, 720, 845 (in *Mo. Bot. Gard. Herb.*, 58984, 58993); *G. R. Bisby*, 1341, 1347 (in *Mo. Bot. Gard. Herb.*, 60550, 60557).
- British Columbia: *G. M. Dawson*, comm. by *W. G. Farlow* (in *Mo. Bot. Gard. Herb.*, 44690).
- California: Berkeley, *W. T. Horne*, comm. by *W. A. Setchell*, 1031 (in *Mo. Bot. Gard. Herb.*, 44239).
- Mexico: Guernavaca, *W. A. & E. L. Murrill*, 361, 371, comm. by

N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54464, 54459); Parral, Chihuahua, *E. O. Mathews*, 19 (in Mo. Bot. Gard. Herb., 44127).

Japan: Kogura Prov., Kozuka, *A. Yasuda*, 154 (in Mo. Bot. Gard. Herb., 62956).

5. *C. granulare* Burt, Mo. Bot. Gard. Ann. 10: 187. 1923.

Type: in Mo. Bot. Gard. Herb.

Fructification effused, adnate, snow-white, pulverulent under a lens, very thin, only 15–30  $\mu$  thick, not bearing a continuous hymenium but consisting of bushy branched, suberect hyphal clusters standing out from the substratum and near together, with their main trunks up to 6  $\mu$  in diameter and short-celled; no cystidia nor gloecystidia; basidia simple,  $15 \times 4\frac{1}{2}$   $\mu$ , with 4 sterigmata; spores hyaline, even, flattened on one side,  $4-4\frac{1}{2} \times 3-4$   $\mu$ , copious.

Fructifications scattered along the substratum, 1–3 cm. long, 4–8 mm. wide.

On dead herbaceous stems. Hawaiian Islands, *F. L. Stevens*, 381, type (in Mo. Bot. Gard. Herb., 60603).

6. *C. ermineum* Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructifications effused, thin, closely adnate, white, not shining, not cracked, the margin similar, thinning out, fimbriate; in section 200  $\mu$  thick, not colored, with some hyphae densely arranged along the substratum but becoming suberect and more loosely arranged towards the hymenium, 3  $\mu$  in diameter, incrustated, not nodose-septate; no gloecystidia; spores hyaline, even,  $7-9 \times 5-6$   $\mu$ , copious.

Fructifications up to 12 cm. long, 3 cm. wide.

On decorticated, very rotten wood of logs of *Thuja plicata* and spruce. Vermont and Idaho. August and October.

*C. ermineum* is distinct among our white species of *Corticium* by its ermine-white color, well-incrustated hyphae, large spores and occurrence on coniferous wood. *C. amylaceum* of France, of which I have a cotype, is a related species but thinner, more farinose, and less compact.

## Specimens examined:

Vermont: Middlebury, *E. A. Burt*.

Idaho: Priest River, *E. E. Hubert*, comm. by J. R. Weir, 12026, type (in Mo. Bot. Gard. Herb., 63379).

7. *C. Berkeleyi* Cooke in Masee, Linn. Soc. Bot. Jour. 27: 133. 1890; Sacc. Syll. Fung. 11: 127. 1895.

Type: type distribution in Ravenel, Fungi Am., 225.

Fructifications broadly effused, thin, membranaceous-arachnoid, small pieces separable when moistened, whitish at first, becoming light buff to pinkish buff in the herbarium, even or minutely granular, not waxy nor shining, cracked, the margin thinning out, with hyphae interwoven; in section 100–200  $\mu$  thick, not colored, with hyphae nodose-septate, not incrustated, 4–5  $\mu$  in diameter along the substratum and sending out ascending, loosely arranged branches which become smaller and densely arranged in the hymenium; no gloecystidia; basidia 4-spored; spores hyaline, even, subglobose and 4–8  $\times$  4–6  $\mu$ , or globose and 4–6  $\mu$  in diameter.

Fructifications 3–10 cm. in diameter.

On bark and wood of conifers—usually pine. Canada to Texas and in Michigan, Idaho, British Columbia, and New Mexico. April to November. Infrequent.

*C. Berkeleyi* probably covers large areas on bark of pine logs. It is white or very nearly white, with the hymenium barely continuous, spores globose or subglobose, and hyphae coarse and mostly erect, like those of *C. bombycinum* but with not as thick fructifications and a very inconspicuous margin in comparison with *C. bombycinum*.

## Specimens examined:

Exsiccati: Ellis, N. Am. Fungi, 934; Ravenel, Fungi Am., 225, type distribution.

Canada: *J. Macoun*, 32; Lower St. Lawrence Valley, *J. Macoun*, 74.

Ontario: Ottawa, *J. Macoun*, 35.

New Hampshire: Chocorua, *W. G. Farlow*, 9.

Vermont: Middlebury, *E. A. Burt*.

New York: Newtonville, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 14854).

North Carolina: Chapel Hill, *J. N. Couch*, comm. by *W. C. Coker*, 4257 (in *Mo. Bot. Gard. Herb.*, 57419).

South Carolina: Aiken, *H. W. Ravenel*, in *Ellis*, *N. Am. Fungi*, 934.

Georgia: Darien, *H. W. Ravenel*, in *Ravenel*, *Fungi Am.*, 225; Savannah, *C. J. Humphrey*, 5109 (in *Mo. Bot. Gard. Herb.*, 11953).

Alabama: Montgomery County, *R. P. Burke*, 519 (in *Mo. Bot. Gard. Herb.*, 57305).

Texas: Quitman, *W. H. Long*, comm. by *C. J. Humphrey*, 2545 (in *Mo. Bot. Gard. Herb.*, 9920).

Michigan: Ann Arbor, *C. H. Kauffman*, 34.

Idaho: Kooskia, *J. R. Weir*, 397 (in *Mo. Bot. Gard. Herb.*, 13544);

Priest River, *J. R. Weir*, 6360 (in *Mo. Bot. Gard. Herb.*, 58449).

British Columbia: Kootenai Mts., near Salmo, *J. R. Weir*, 478 (in *Mo. Bot. Gard. Herb.*, 63274).

New Mexico: Cloudcroft, *W. H. Long*, 19523 (in *Mo. Bot. Gard. Herb.*, 44767); Mogollen, *G. G. Hedgcock & W. H. Long*, comm. by *C. J. Humphrey*, 2559 (in *Mo. Bot. Gard. Herb.*, 9781).

8. *C. arachnoideum* Berkeley, *Ann. & Mag. Nat. Hist.* 13: 345. *pl. 9, f. 3.* 1844; *Outl. Brit. Fung.* 273. 1860; *Berk. & Curtis, Grevillea* 2: 4. 1873; *Fries, Hym. Eur.* 649. 1874; *Sacc. Syll. Fung.* 6: 611. 1888; *Massee, Linn. Soc. Bot. Jour.* 27: 135. 1890; *Bresadola, Ann. Myc.* 1: 93. 1903.

Not probably *C. arachnoideum* as understood by *v. Höhnelt & Litschauer*, and *Rea*.

Type: in *Kew Herb.*

Fructifications effused, thin, arachnoid, tender, snow-white, forming an even hymenial pellicle in the older, more central portions, supported on the loosely arranged arachnoid subiculum which protrudes as a sterile, delicate, web-like margin; in section 100–200  $\mu$  thick, not colored, with hyphae very loosely interwoven, 3–4  $\mu$  in diameter, nodose-septate, not incrustated; no gloeocystidia; spores hyaline, even, globose, or subglobose, 4–6  $\mu$  in diameter or  $6 \times 5 \mu$ ,  $5 \times 4 \mu$ ,  $4-4\frac{1}{2} \times 3-4 \mu$ .

Fructifications 2–6 cm. long, 1–3 cm. wide.

On humus of leaf fragments and decaying wood, running over

mosses and lichens and on rotten wood. Rare in Europe, common in North America from Canada to Louisiana and westward to the Pacific, in the West Indies and the Hawaiian Islands. May to November.

*C. arachnoideum* is globose-spored and separated from *C. lacteum* by white color, more arachnoid subiculum, and thinner and less compact hymenium. *C. centrifugum*, which is common in Europe and infrequent in North America, has narrower spores than *C. arachnoideum*, is less arachnoid, more inclined to ashy white color, more widely effused, and on decaying wood preferably. Our American specimens of *C. arachnoideum* agree perfectly with those of Berkeley in Kew and with the Berkeley & Curtis specimens also determined by Berkeley.

Specimens examined:

Exsiccati: Brinkmann, *Westfälische Pilze*, 103; Ellis, *N. Am. Fungi*, 411; Ell. & Ev., *Fungi Col.*, 918.

Sweden: *L. Romell*, 77; Stockholm, *L. Romell*, 161.

England: on moss, 437, authentic specimen, perhaps type, *M. J. Berkeley* (in Kew Herb.).

Scotland: Glamis, *J. Stevenson* (in Berkeley Herb. of Kew Herb.).

Germany: Westphalia, *W. Brinkmann*, comm. by Bresadola, and in Brinkmann, *Westfälische Pilze*, 103 (in Mo. Bot. Gard. Herb., 63441).

Austria: Stubai, Tirol, *V. Litschauer*, under the name *Corticium centrifugum* var. *macrosporum*.

Canada: *J. Macoun*, 47, 63; Lower St. Lawrence Valley, *J. Macoun*, 12, 64, 89; London, Ontario, *J. Dearness*, 1146 (in Mo. Bot. Gard. Herb., 18762); Ottawa, *J. Macoun*, 400.

Newfoundland: Bay of Islands, *A. C. Waghorne*, 1014 (in Mo. Bot. Gard. Herb., 4813).

Massachusetts: Sharon, *A. P. D. Piguet*, comm. by W. G. Farlow, and 135, comm. by Farlow Herb. (in Mo. Bot. Gard. Herb., 59626).

Vermont: Middlebury, *E. A. Burt*, 4 gatherings.

New York: Albany, *H. D. House* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 57509); Bolton, *C. H. Peck*, 17; Bolton Landing, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55769); East Galway, *E. A. Burt*; Ithaca, *G. F.*

- Atkinson*, 2125, 8054, 8240, 14356; *H. S. Jackson*, 18658; *C. Thom*, 14367; *Karner*, *H. D. House*, comm. by N. Y. State Mus. Herb. (in Mo. Bot. Gard. Herb., 55193).
- New Jersey: Newfield, *J. B. Ellis*, in *Ellis*, N. Am. Fungi, 411, *Ell. & Ev.*, Fungi Col., 918, and 1374, comm. by *W. G. Farlow* (in Mo. Bot. Gard. Herb., 14652).
- Maryland: Takoma Park, *C. L. Shear*, 1029, 1105.
- North Carolina: Blowing Rock, *G. F. Atkinson*, 4325; Chapel Hill, *J. N. Couch*, comm. by *W. C. Coker*, 4235a (in Mo. Bot. Gard. Herb., 57418).
- South Carolina: *M. A. Curtis*, 2513 (in *Farlow Herb.*).
- Mississippi: Ocean Springs, *L. M. Underwood* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61482).
- Louisiana: Plaqueminas County, *A. B. Langlois*, 998.
- Illinois: Riverside, *E. T. & S. A. Harper*, 738.
- Montana: Hecla, *E. E. Hubert*, comm. by *J. R. Weir*, 11408 (in Mo. Bot. Gard. Herb., 63264); Missoula, *J. R. Weir*, 402 (in Mo. Bot. Gard. Herb., 11256); Rock Hill, *J. R. Weir*, 11963 (in Mo. Bot. Gard. Herb., 63224); Yellow Bay, *J. A. Hughes*, comm. by *J. R. Weir*, 7035 (in Mo. Bot. Gard. Herb., 55466).
- Idaho: Coolin, *J. R. Weir*, 11540 (in Mo. Bot. Gard. Herb., 63295); Ruby Creek, *E. E. Hubert*, comm. by *J. R. Weir*, 12009 (in Mo. Bot. Gard. Herb., 63369); Sandpoint, *E. E. Hubert*, comm. by *J. R. Weir*, 12024 (in Mo. Bot. Gard. Herb., 63377).
- Manitoba: Norway House, *G. R. Bisby*, 1465 (in Mo. Bot. Gard. Herb., 57912).
- Washington: Falcon Valley, *W. N. Suksdorf*, 725; Mt. Paddo, *W. N. Suksdorf*, 734; Sedro-Woolley, *C. J. Humphrey*, 1045 (in Mo. Bot. Gard. Herb., 10901).
- Oregon: Wallowa Lake, *C. L. Shear*, 798.
- California: Redding, *C. J. Humphrey*, 1045; Santa Catalina Island, *L. W. Nuttall*, 1092 (in Mo. Bot. Gard. Herb., 58871).
- Cuba: San Diego de los Baños, *Earle & Murrill*, 361, comm. by N. Y. Bot. Gard. Herb.
- Porto Rico: Rio Piedras, *J. A. Stevenson*, 6557 (in Mo. Bot. Gard. Herb., 55080).
- Hawaiian Islands: *F. L. Stevens*, 964 (in *Stevens Herb.*, Mo. Bot. Gard. Herb., 60602, and *Burt Herb.*).

9. *C. portentosum* Berk. & Curtis, Grevillea 2: 3. 1873; Morgan, Cincinnati Soc. Nat. Hist. Jour. 10: 201. 1888; Sacc. Syll. Fung. 6: 636. 1888; Masee, Linn. Soc. Bot. Jour. 27: 129. 1890; Bourdot & Galzin, Soc. Myc. Fr. Bul. 27: 235. 1911.

*Corticium diminuens* Berk. & Curtis, Grevillea 2: 3. 1873; Sacc. Syll. Fung. 6: 631. 1888; Masee, Linn. Soc. Bot. Jour. 27: 158. 1890.—*Stereum portentosum* (Berk. & Curtis) v. Höhnelt & Litschauer, K. Akad. Wiss. Wien Sitzungsber. 116: 743. 1907.—*Corticium portentosum crystallophorum* Ell. & Ev. Torr. Bot. Club Bul. 24: 125. 1897.—*Corticium Aluta* Bresadola in v. Höhnelt & Litschauer, Wiesner Festschr. Wien, 62. 1908.—An *Corticium grammicum* P. Hennings, Engl. Bot. Jahrb. 38: 106. 1905? Compare v. Höhnelt & Litschauer, K. Akad. Wiss. Wien Sitzungsber. 116: 743. 1907.

Type: in Kew Herb. and Curtis Herb.

Fructifications long and widely effused, thick, coriaceous-soft, small pieces separable when moistened, white, becoming light buff to warm buff in the herbarium, even, only rarely cracked, the margin often whitish, pubescent-villose; in section 150–1000  $\mu$  thick, colored like the hymenium, becoming zonate or stratose when thick, composed of very densely interwoven, tough hyphae about 1–2  $\mu$  in diameter, not incrustated, not nodose-septate, protruding in the hymenial surface as curved paraphyses; more or less numerous aggregations of mineral matter may be immersed in the substance; no gloeocystidia; basidia few; spores hyaline, even, spherical,  $4\frac{1}{2}$ –7  $\mu$  in diameter, few present usually.

Fructifications 4–12 cm. long, 2–4 cm. wide.

On bark and wood of logs of frondose species. In Europe, South Africa, throughout North America and the West Indies, in South America, and in the Philippine Islands. Common.

*C. portentosum* is well named and may be recognized by its large, whitish, coriaceous fructifications on frondose logs, which become zonate within in thick specimens, and have globose spores 6  $\mu$  in diameter, and the slender branches of the interwoven hyphae exceeding the basidia and forming the hymenial surface. This species was formerly confused in Europe with *Stereum alneum* and was communicated to me under this name by both Karsten and Bresadola. It also occurs from Lindblad in Kew

Herb. and from Blytt in Fries Herb. under the name of *Stereum odoratum*, from another specimen of which, determined by E. Fries, it differs by the elongated spores and occurrence on *Pinus* of the latter.

Specimens examined:

Exsiccati: Ellis, N. Am. Fungi, 718; Ell. & Ev., N. Am. Fungi, 1715; Ravenel, Fungi Car. 3: 31; de Thuemen, Myc. Univ., 2013, under the name *Corticium radiosum*.

Finland: Mustiala, P. A. Karsten, in de Thuemen, Myc. Univ., 2013; Vasa, P. A. Karsten, under the name *Stereum alneum*.

Sweden: Stockholm, L. Romell, 26, 159, both under the name *Stereum alneum*.

Germany: Feldkirch, Rick, comm. by Bresadola, under the name *Stereum alneum*.

Hungary: Kmet, comm. by Bresadola, under the name *Stereum odoratum*.

Italy: locality not stated, Bresadola, comm. under the name *Stereum alneum*; Trento, Bresadola.

France: Aveyron, A. Galzin, 14990, comm. by H. Bourdot, 15750.

Canada: Ontario, London, J. Dearnness, 1287 (in Mo. Bot. Gard. Herb., 19057).

New York: Ithaca, G. F. Atkinson, 3406; Poughkeepsie, W. R. Gerard, 316 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61385).

Pennsylvania: Michener, type (in Kew Herb., and Curtis Herb., 3620); West Chester, Everhart, Haines, Jefferis & Gray, in Ellis, N. Am. Fungi, 718.

Florida: W. W. Calkins, in Ell. & Ev. N. Am. Fungi, 718, and (in N. Y. Bot. Gard. Herb., Mo. Bot. Gard. Herb., 61488, and Burt Herb.); H. von Schrenk (in Mo. Bot. Gard. Herb., 44202); Cocoonut Grove, R. Thaxter, 99 (in Mo. Bot. Gard. Herb., 43926); Cutler Hammock, W. A. Murrill, 76, 252, 253, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 62101, 62129, and 62128, respectively); Miami, W. H. Long, 12290 (in Mo. Bot. Gard. Herb., 55051); Palm Beach, R. Thaxter, 15 (in Mo. Bot. Gard. Herb., 43928).

Alabama: Peters, type distribution of *Corticium diminuens*, in Ravenel, Fungi Car. 3: 31, and (in Curtis Herb., 4009); Mont-

- gomery County, *R. P. Burke*, 464 (in *Mo. Bot. Gard. Herb.*, 57285).
- Louisiana: *A. B. Langlois*, 244, comm. by U. S. Dept. Agr. Herb.; St. Martinville, *A. B. Langlois*, 1762, 2098, and 1247, comm. by *W. G. Farlow* (in *Mo. Bot. Gard. Herb.*, 44075), and 2438, type of *Corticium portentosum crystallophorum*.
- Texas: San Antonio, *W. H. Long*, 21187 (in *Mo. Bot. Gard. Herb.*, 55132); Uvalde, *W. H. Long*, 21686 (in *Mo. Bot. Gard. Herb.*, 55133).
- Kentucky: Mammoth Cave, *C. G. Lloyd*, 2568.
- Ohio: Cincinnati, *A. P. Morgan* (in *Lloyd Herb.*, 2604, and under the name *Corticium subgiganteum*); Loveland, *D. L. James* (in U. S. Dept. Agr. Herb.); West Elkton, *L. O. Overholts*, 4208 (in *Mo. Bot. Gard. Herb.*, 55637); Waynesville, *F. G. Lea*, the *C. ochraceum* of *Lea's Cat. Plants of Ohio* (in *Berkeley Herb. at Kew*).
- Indiana: Scottsburg, *J. R. Weir*, 369 (in *Mo. Bot. Gard. Herb.*, 17771); Weirtown, *J. R. Weir*, 353 (in *Mo. Bot. Gard. Herb.*, 9933).
- Wisconsin: Lake Geneva, *E. T. & S. A. Harper*, 848; Star Lake, *Miss Stucki*, 56.
- Missouri: Columbia, *B. M. Duggar*, 569.
- British Columbia: Sidney, *J. Macoun*, 24, 37, 86, 88, 105, 165 (in *Mo. Bot. Gard. Herb.*, 5685, 55348, 8109, 11350, 55349, 20477); Squamish, *J. Macoun*, 537, 570 (in *Mo. Bot. Gard. Herb.*, 55192, 55185); Vancouver Island, *J. Macoun*, 144, 295, 537 (in *Mo. Bot. Gard. Herb.*, 18865, 55320, 55319).
- Mexico: Jalapa, *W. A. & E. L. Murrill*, 115, 191, 346, comm. by N. Y. Bot. Gard. Herb. (in *Mo. Bot. Gard. Herb.*, 10854, 54437, 54481); Orizaba, *W. A. & E. L. Murrill*, 750, comm. by N. Y. Bot. Gard. Herb. (in *Mo. Bot. Gard. Herb.*, 54636).
- Bermuda: Paget Swamp, *H. H. Whetzel*, Abf (in *Mo. Bot. Gard. Herb.*, 58910).
- Cuba: Baracoa, *L. M. Underwood & F. S. Earle*, 784, comm. by N. Y. Bot. Gard. Herb. (in *Mo. Bot. Gard. Herb.*, 61556); Camaguey (in *Mo. Bot. Gard. Herb.*, 56123); Havana Province, *Earle & Murrill*, 24, 103, comm. by N. Y. Bot. Gard. Herb.; Omaja, *C. J. Humphrey*, 2709, 2830 (in *Mo. Bot. Gard. Herb.*,

13740, 14847); Oriente, comm. by J. R. Weir 10617 (in Mo. Bot. Gard. Herb., 56235); Pinar del Rio Province, *Earle & Merrill*, 196, 201, 208, 295, 312, comm. by N. Y. Bot. Gard. Herb., *P. Wilson*, 11570, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 61494); Puerto Principe Province, *Earle & Merrill*, 582, 602, comm. by N. Y. Bot. Gard. Herb.; Santiago de Cuba Province, *Earle & Merrill*, 460, 467, comm. by N. Y. Bot. Gard. Herb.

Porto Rico: Ponce, *F. S. Earle*, 117; Rio Piedras, *J. R. Johnston*, 982, 982a, 972a (in Mo. Bot. Gard. Herb., 9849, 61355, 61356), *J. A. Stevenson*, 3597, 5158 (in Mo. Bot. Gard. Herb., 12720, 6807); Utuado, *N. L. Britton & J. F. Cowell*, 999 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61492).

Jamaica: *W. A. & E. L. Merrill*, 40, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 56288); Castleton Gardens and Chester Vale, *W. A. & E. L. Merrill*, 52, 314, respectively, comm. by N. Y. Bot. Gard. Herb.; Hope Gardens, *F. S. Earle*, 178, comm. by N. Y. Bot. Gard. Herb.

Montserrat: Roches, *J. A. Shafer*, 915 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61473).

Argentina: *R. Fries*, 138, comm. by L. Romell, 333.

Philippine Islands: comm. by C. G. Lloyd, 11215 (in Mo. Bot. Gard. Herb., 58688).

Africa: Natal, Durban, *P. A. van der Bijl*, 2, 36 (in Mo. Bot. Gard. Herb., 58800, 58834); Unkomaas, *P. A. van der Bijl*, 1151 (in Mo. Bot. Gard. Herb., 62079).

**10. *C. bombycinum*** (Sommerf.) Bresadola, I. R. Accad. Agiati Atti III. 3: 111. 1897; Bourdot & Galzin, Soc. Myc. Fr. Bul. 27: 233. 1911; Wakefield & Pearson, Brit. Myc. Soc. Trans. 6: 138. *text f.* 1919; Rea, Brit. Basid. 674. 1922.

*Thelephora bombycina* Sommerfelt, Fl. Lapp. Suppl. 284. 1826; Fries, Elench. Fung. 1: 211. 1828.

Type: in Sommerfelt Herb., in Univ. of Christiania Herb., a fragment in Burt Herb.

Fructifications irregularly effused, thick, membranaceous-soft, pieces separable, at first white, becoming pinkish buff to cream-buff in the herbarium, even or varying rough to a hydroid sur-

face, somewhat cracked, the margin and subiculum floccose to fibrillose and sometimes hirsute; in section 200–1000  $\mu$  thick, with the hyphae suberect, loosely interwoven, thick-walled, 4–5  $\mu$  in diameter, nodose-septate; no gloeocystidia; spores hyaline, even, 6–10  $\times$  5–6  $\mu$ .

Fructifications 3–10 cm. long, 2–3 cm. wide.

On bark of living and dead *Salix* and *Alnus* usually, but also on *Betula*, *Acer*, *Tilia*, *Populus*, and *Pinus*. In Europe and from Canada to Massachusetts and westward to Washington and Arizona, and in Texas. July to March. Uncommon.

*C. bombycinum* is a thick species with description somewhat suggestive of *C. cremoricolor*, but it does not crack radially, and tend to brown color like the latter, is more spongy and with more pelliculose hymenium and with a broader, thicker, and very conspicuous margin, and favors *Salix* as a substratum.

Specimens examined:

Exsiccati: Brinkmann, *Westfälische Pilze*, 11; Jaczewski, *Fungi Rossiae*, 232, under the name *Hypochnus Sambuci*; Romell, *Fungi Scand.*, 35, under the name *Corticium serum*.

Norway: Saltd, *Sommerfelt*, fragment of type comm. by L. Romell.

Sweden: Stockholm, *L. Romell*, 63, 64, 65, 201, 344, and in Romell, *Fungi Scand.*, 35; Upsala, *L. Romell*, two unnumbered specimens.

Russia: in Jaczewski, *Fungi Rossiae*, 232.

Germany: Lengerich, in Brinkmann, *Westfälische Pilze*, 11.

Austria: Feldkirch, *Rick*, comm. by Bresadola.

Canada: *J. Macoun*, 56, 60, in part, 157; Lower St. Lawrence Valley, *J. Macoun*, 30.

Ontario: Port Credit and Toronto, *J. H. Faull*, 655 and 380, respectively (in *Mo. Bot. Gard. Herb.*, 44943, 44948).

Vermont: Middlebury, *E. A. Burt*.

Massachusetts: on beams in cotton mill, *R. J. Blair*, 248, in part, comm. by L. O. Overholts, 3812a (in *Mo. Bot. Gard. Herb.*, 54995).

New York: Alcove, *C. L. Shear*, 1317; Clear Water, *G. F. Atkinson*, 5050; East Galway, *E. A. Burt*; Hudson Falls, *S. H. Burnham*, 14 (in *Mo. Bot. Gard. Herb.*, 44007); Kenwood, *S. H.*

*Burnham*, comm. by N. Y. State Mus. Herb. (in Mo. Bot. Gard. Herb., 56048).

Texas: Quitman, *W. H. Long*, 12092 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61343).

Michigan: Ann Arbor, *C. H. Kauffman*, 18.

Minnesota: Princeton, *C. J. Humphrey*, 1030 (in Mo. Bot. Gard. Herb., 21779).

Washington: Bingen, *W. N. Suksdorf*, 905, 915.

Arizona: Flagstaff, *W. H. Long*, 19449 (in Mo. Bot. Gard. Herb., 55141).

11. *C. sociatum* Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructifications effused, small, closely adnate, very thin, white, becoming continuous and somewhat waxy at the center, even, barely cracked, the margin thinning out, with hyphae interwoven; in section 70–90  $\mu$  thick, not colored, with the hyphae loosely interwoven near the substratum, 3  $\mu$  in diameter, not incrustated, not nodose-septate; no gloeocystidia; basidia with 4 sterigmata; spores hyaline, even,  $10\frac{1}{2}$ –12  $\times$  5–6  $\mu$ , copious; a few imbedded spores present.

Fructifications 2–10 mm. long, 1–3 mm. wide—24 on an area 9 cm. long, 2 cm. wide.

On bark of decaying logs of *Thuja plicata*. Manitoba and British Columbia. August.

*C. sociatum* is a white species belonging in the group with *C. arachnoideum*, *C. centrifugum*, and *C. pelliculare* but distinct by the many small fructifications arranged near together, large spores, and hyphae neither nodose-septate nor incrustated.

Specimens examined:

Manitoba: Norway House, *G. R. Bisby*, 1466 (in Mo. Bot. Gard. Herb., 61649).

British Columbia: Kootenai Mts. near Salmo, *J. R. Weir*, 529, type (in Mo. Bot. Gard. Herb., 21596).

12. *C. scutellare* Berk. & Curtis, *Grevillea* 2: 4. 1873; Sacc. *Syll. Fung.* 6: 634. 1888; Masee, *Linn. Soc. Bot. Jour.* 27: 128. 1890.

Type: in Kew Herb. and Farlow Herb.

Fructifications long and widely effused, thin, adnate, from white becoming cream-buff to warm buff in the herbarium, waxy, often granular, finally very much cracked into minute areolae, 1-3 to a mm., which flake away from the substratum—sometimes leaving some of the white subiculum on the latter, the margin thinning out; in section 120-250  $\mu$  thick, not colored, composed of sub-erect, interwoven, thin-walled hyphae  $2\frac{1}{2}$ - $3\frac{1}{2}$   $\mu$  in diameter, incrusting in the subhymenial region so as to form a conspicuous subhymenial zone of mineral matter; no cystidia nor gloeocystidia; spores hyaline, even,  $4-6 \times 2-3$   $\mu$ .

Fructifications 2-8 cm. long, 1-4 cm. wide.

On fallen decaying limbs of frondose species. New York to Louisiana and westward to Kansas, in the West Indies, Japan, and South Africa. June to January. Common in the southern states.

*C. scutellare*, when fully mature in the southern states, may be recognized at sight by the very numerous areolae wholly separated from one another by fissures, but less mature and more northern specimens may be cracked into more rectangular masses up to 2 cm. in diameter and more or less connected together. In such specimens the subhymenial zone of mineral matter is a helpful character, for this zone is constant and conspicuous when sections are examined and, together with the small spores, afford sharp distinctive characters.

Specimens examined:

New York: Albany County, *S. H. Burnham*, 29 (in Mo. Bot. Gard. Herb., 54484); Alcove, *C. L. Shear*, 998; Fort Ann, *S. H. Burnham*, 43, in part (in Mo. Bot. Gard. Herb., 54453); Hudson Falls, *S. H. Burnham*, 16, 35 (in Mo. Bot. Gard. Herb., 54499, 54451); Ithaca, *H. S. Jackson*, *C. Thom*, comm. by Cornell Univ. Herb., 18201 and 14371, respectively; Karner, *H. D. House* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb. 54380), and *C. H. Peck*, comm. by N. Y. State Mus. Herb., T6 (in Mo. Bot. Gard. Herb., 54640); Meadowdale, *C. H. Peck*, comm. by N. Y. State Mus. Herb., T6 (in Mo. Bot. Gard. Herb., 54640); North Elba, *C. H. Peck* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 55973); Port Jefferson,

- C. H. Peck* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 55981).
- New Jersey: Newfield, *J. B. Ellis*, 418, 2052, 2475, and 2 unnumbered specimens comm. by W. G. Farlow (in Mo. Bot. Gard. Herb., 16061, 14255, 7657, 7456 and 44642, respectively).
- Pennsylvania: Philadelphia, *A. S. Rhoads*, comm. by L. O. Overholts, 2680 (in Mo. Bot. Gard. Herb., 5918); Trexlertown, *W. Herbst*, 40.
- District of Columbia: Takoma Park, *E. M. Williams* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55812).
- Virginia: Chain Bridge, *A. S. Rhoads*, comm. by L. O. Overholts, 3968 (in Mo. Bot. Gard. Herb., 54985).
- South Carolina: type (in Curtis Herb., 2473).
- Georgia: Tallulah Falls, *A. B. Seymour*, comm. by Farlow Herb., E (in Mo. Bot. Gard. Herb., 44610).
- Florida: *Mr. Curtiss*, comm. by W. G. Farlow.
- Alabama: Auburn, *Ala. Biol. Survey*; Montgomery, *R. P. Burke*, 6, 84, 143, 148, 239 (in Mo. Bot. Gard. Herb., 22316, 20508, 10673, 44907, 57104, respectively).
- Mississippi: Ocean Springs, *F. S. Earle*, 183 (in Mo. Bot. Gard. Herb., 4838).
- Louisiana: *A. B. Langlois*, 134, comm. by U. S. Dept. Agr. Herb.; St. Martinville, *A. B. Langlois*, aa, 856, 2632, and a specimen comm. by Lloyd Herb., 4128.
- Kentucky: Mammoth Cave, *C. G. Lloyd*, 2562.
- Indiana: Crawfordsville, *D. Reddick*, 9.
- Illinois: Glencoe, *E. T. & S. A. Harper*, 821.
- Missouri: Columbia, *B. M. Duggar*, 589.
- Kansas: Rooks County, *E. Bartholomew*.
- Jamaica: Chester Vale, *W. A. & E. L. Murrill*, 290, 329, 341, comm. by N. Y. Bot. Gard. Herb.; Hope Gardens, *F. S. Earle*, 192, comm. by N. Y. Bot. Gard. Herb.; Monkey Hill, *W. A. & E. L. Murrill*, 783, comm. by N. Y. Bot. Gard. Herb.; New Haven Gap, *W. A. & E. L. Murrill*, 766, comm. by N. Y. Bot. Gard. Herb.; St. Margaret's Bay, *A. E. Wight*, comm. by W. G. Farlow, 4 (in Mo. Bot. Gard. Herb., 44076).
- Japan: Shinokubi, Prov. Harima, *A. Yasuda*, 6 (in Mo. Bot. Gard. Herb., 55664).

Africa: Erhove, Zululand, *P. A. van der Bijl*, 26 (in *Mo. Bot. Gard. Herb.*, 58824); Houtbos, Transvaal, *P. A. van der Bijl*, 1482.

13. *C. tuberculatum* Karsten, *Hedwigia* 35: 45. 1896; *Krit. Öfvers. Finl. Basidsv. Tilläg* 3: 29. 1898; *Sacc. Syll. Fung.* 14: 221. 1899; v. Höhnelt & Litschauer, *K. Akad. Wiss. Wien Sitzungsber.* 115: 1561. 1906.

Type: authentic specimen or part of type in Burt Herb.

Fructifications orbicular or longitudinally effused, rather thick, somewhat membranaceous, small pieces separable when moistened, white at first, becoming light buff to warm buff in the herbarium, somewhat colliculose or tuberculate, waxy, the margin radiately fibrillose; in section 200–300  $\mu$  thick, not colored, with the hyphae densely interwoven in a narrow layer next to the substratum and then ascending obliquely and not crowded to the compact hymenial layer,  $3\frac{1}{2}$ – $4\frac{1}{2}$   $\mu$  in diameter, somewhat incrustated in the type, not nodose-septate; no gloecystidia; spores hyaline, even,  $4$ – $6 \times 2\frac{1}{2}$ – $3\frac{1}{2}$   $\mu$ , copious.

Pieces of fructification  $2\frac{1}{2}$  cm. in diameter in the specimen seen.

On bark and wood of fallen branches of *Populus*, *Fraxinus*, and other frondose species. Finland, Pennsylvania to Wisconsin. Rare.

*C. tuberculatum* approaches *Radulum* in having a middle layer of loosely arranged, ascending hyphae and a somewhat colliculose surface and some small tubercles in the authentic specimen communicated to me by Karsten and which agrees closely with his description of the species. The general aspect somewhat resembles that of *Peniophora mutata*. The American gatherings cited below have a more even hymenium and hyphae not incrustated and are doubtfully referred to *C. tuberculatum*.

Specimens examined:

Finland: Mustiala, *P. A. Karsten*, probably part of type.

Pennsylvania: Trexlertown, *W. Herbst*, 77.

Michigan: East Tower, *J. R. Weir*, 370 (in *Mo. Bot. Gard. Herb.*, 17074).

Wisconsin: Madison, *A. O. Stucki*, 44, comm. by Univ. Wis. Herb.

14. *C. crustaceum* (Karsten) v. Höhnelt & Litschauer, K. Akad. Wiss. Wien Sitzungsber. 115: 1566. 1906.

*Xerocarpus crustaceus* Karsten, Hedwigia 35: 45. 1896.—*Stereum crustaceum* Karsten in Sacc. Syll. Fung. 14: 215. 1899.

Type: in Karsten Herb. and Burt Herb.

Fructifications effused, thin, crustaceous-adnate, somewhat grumose, not at all separable, white or whitish, even or somewhat granular, conforming to inequalities of the substratum, somewhat cracked; in section 40–100  $\mu$  thick, not colored, composed of densely arranged hyphae 2  $\mu$  in diameter, not well shown, with crystalline masses intermixed; no gloeocystidia; spores hyaline, even,  $4\frac{1}{2}$ –5  $\times$  3  $\mu$ , copious.

Fructifications 2–6 cm. long, 1–3 cm. wide.

On rough bark of *Acer*, *Crataegus*, *Populus*, *Salix*, *Ulmus*, and *Abies*. Finland and Canada to Florida. July to November. Probably common.

*C. crustaceum* is so similar in aspect to *Peniophora Sambuci* that it is necessary to distinguish it from the latter by the microscopic characters of sectional preparations. *C. crustaceum* has no cystidia, has more densely arranged hyphae and a good deal of obscuring crystalline matter intermixed.

Specimens examined:

Finland: Mustiala, P. A. Karsten, authentic specimen on *Populus*.

Canada: J. Macoun, 1, 2; St. Lawrence Valley, J. Macoun, 27, 49, 51.

Ontario: Ottawa, J. Macoun (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55902), and 4.

Quebec: Hull, J. Macoun, 82.

Vermont: Middlebury, E. A. Burt.

West Virginia: Paw Paw, C. L. Shear, 1176.

Florida: Jacksonville, W. W. Calkins, comm. by Farlow Herb. (in Mo. Bot. Gard. Herb., 44637).

15. *C. pelliculare* Karsten, Finska Vet.-Soc. Bidrag Natur och Folk 48: 411. 1889; Hedwigia 35: 46. 1896; Sacc. Syll. Fung. 9: 232. 1891; Bourdot & Galzin, Soc. Myc. Fr. Bul. 27: 239. 1911.—Cf. v. Höhnelt & Litschauer, K. Akad. Wiss. Wien Sitzungsber. 115: 1556. 1906.

Type: fragment of type and authentic specimen in Burt Herb.

Fructifications broadly effused, thin, membranaceous, tender, small pieces separable, white when fresh, becoming ivory-yellow to cream-buff in the herbarium, even, somewhat cracked and showing a loose, cottony subiculum which extends out beyond the hymenium as a fimbriate, white margin; in section 100–300  $\mu$  thick, not colored, composed of loosely interwoven and ascending, thin-walled hyphae  $2\frac{1}{2}$ – $3\frac{1}{2}$   $\mu$  in diameter, sparingly nodose-septate, rarely incrustated in the subhymenium; no gloeocystidia; spores hyaline, even,  $4-6 \times 2-3$   $\mu$ .

Fructifications 2–6 cm. long, 1–3 cm. wide.

On decaying limbs of both coniferous and frondose species. In Europe and from New Hampshire to Pennsylvania, in Illinois, British Columbia to Mexico, and in Bermuda. June to December. Infrequent.

*P. pelliculare* has delicate white to creamy fructifications distinguishable from those of *C. lacteum* by the small spores not at all globose.

Specimens examined:

Exsiccati: Thümen, Myc. Univ., 1607, under the name *Corticium laeve*.

Finland: Mustiala, *P. A. Karsten*, fragment of type comm. by Karsten to Bresadola and by Bresadola to Romell and by Romell to Burt.

Sweden: *K. Starback*, authentic specimen comm. by Karsten; *L. Romell*, 319; Femsjö, *E. A. Burt*, two gatherings; Stockholm, *L. Romell*, 298A, 320.

New Hampshire: Chocorua, *W. G. Farlow*, C37 (in Mo. Bot. Gard. Herb., 43968).

Vermont: Middlebury, *E. A. Burt*.

New York: Albany, *H. D. House* (in N. Y. State Mus. Herb., and in Mo. Bot. Gard. Herb., 57490); Orient Point, *R. Latham*, 3 (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55700).

New Jersey: Belleplain, *C. L. Shear*, 1237; Newfield, *J. B. Ellis*, in Ell. & Ev. Fungi Col., 1207.

Pennsylvania: Bear Meadows, *L. O. Overholts*, 2890 (in Mo. Bot. Gard. Herb., 5717); Trexlertown, *W. Herbst*, 15.

Michigan: Ann Arbor, *C. H. Kauffman*, 19.

- Illinois: Helleydayboro, *C. J. Humphrey*, 1351 (in Mo. Bot. Gard. Herb., 59017); Port Byron, *E. T. & S. A. Harper*, 733.
- British Columbia: Kootenai Mts., Salmo, *J. R. Weir*, 456 (in Mo. Bot. Gard. Herb., 13043); Sidney, *J. Macoun*, 11 (in Mo. Bot. Gard. Herb., 5729).
- Washington: Bingen, *W. N. Suksdorf*, 879, 919.
- Arizona: Flagstaff, *W. H. Long*, 19491 (in Mo. Bot. Gard. Herb., 44738, 55135); First Valley Experiment Station, *W. H. Long*, 21119 (in Mo. Bot. Gard. Herb., 55136).
- Mexico: Chihuahua, Parral, *E. O. Mathews*, 2, 26 (in Mo. Bot. Gard. Herb., 44126, 44125); Guernavaca, *W. A. & E. L. Merrill*, 418, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb. 54512).
- Bermuda: on cornstalks, *S. Brown, N. L. Britton & F. J. Seaver*, 11248 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 4809).

16. *C. Auberianum* Montagne in La Sagra, Hist. de Cuba 9<sup>2</sup>: 226. 1845; Syll. Crypt. 178. 1856; Sacc. Syll. Fung. 6: 616. 1888; Masee, Linn. Soc. Bot. Jour. 27: 135. 1890.

Type: part of type in Kew Herb.

Fructifications effused, orbicular at first, becoming longitudinally elongated, adnate, very thin, white, floccose-farinaceous, even, sometimes somewhat cracked, the margin thinning out, floccose; in section 45–120  $\mu$  thick, not colored, composed of sub-erect, branching, interwoven, thin-walled hyphae about 2  $\mu$  in diameter, not nodose-septate; no gloeocystidia; no cystidia; spores hyaline, even, flattened on one side, 4–5  $\times$  2–3  $\mu$ .

Fructifications at first 2–10 mm. in diameter, finally up to 10 cm. long, 1 cm. broad.

On small decaying, fallen twigs of frondose species. Vermont to Louisiana, and in the West Indies. August to March. Rare.

*C. Auberianum* may be recognized by its very thin, snow-white fructifications having a farinose hymenial surface, small spores, and slender, thin-walled hyphae throughout. No gloeocystidia are present nor coarse hyphae near substratum. The occurrence of several small fructifications near together when young is characteristic. The hyphae are probably somewhat incrustated, but this needs confirmation.

## Specimens examined:

Vermont: *E. A. Burt*, two gatherings.

North Carolina: Blowing Rock, *G. F. Atkinson*, 4330.

South Carolina: On *Carya*, *Curtis Herb.*, 2497 (in *Kew Herb.*).

Georgia: Tallulah Falls, *A. B. Seymour*, comm. by *Farlow Herb.*, DD (in *Mo. Bot. Gard. Herb.*, 44595).

Florida: Sands Key, *R. A. Harper*, 6 (in *Mo. Bot. Gard. Herb.*, 54537).

Louisiana: St. Martinville, *A. B. Langlois*, *Q, R*.

Arkansas: Womble, *W. H. Long*, 19823, 19821, in part (in *Mo. Bot. Gard. Herb.*, 8633, 17801).

Bermuda: Walsingham, *H. H. Whetzel*, *Aat* (in *Mo. Bot. Gard. Herb.*, 58718).

Cuba: presumable part of type from Montagne to Berkeley (in *Kew Herb.*); Managua, *Earle & Murrill*, 26, comm. by N. Y. Bot. Gard. Herb.; San Antonio de los Baños, Havana Province, *Earle & Murrill*, 46, comm. by N. Y. Bot. Gard. Herb.; San Diego de los Baños, Havana Province, *Earle & Murrill*, 332, comm. by N. Y. Bot. Gard. Herb.; locality not stated, *C. G. Lloyd*, 430 (in *Mo. Bot. Gard. Herb.*, 55176).

17. *C. galactinum* (Fr.) Burt, in *Moffatt*, *Chicago Acad. Sci. Bul.* 7: 137. 1909.

*Thelephora galactina* Fries, *R. Soc. Sci. Upsal. Acta* III. 1: 136. 1851; *Sacc. Syll. Fung.* 6: 541. 1888; *von Schrenk, Bot. Gaz.* 34: 65. 1902.—An *Corticium rigescens* Berk. & *Curtis* in *Cooke, Grevillea* 20: 12. 1891?

Type: in *Fries Herb.* and *Curtis Herb.*

Fructifications long and broadly effused, becoming rather thick, coriaceous-soft, closely adnate, small pieces separable, white to cream-color, waxy, even, not cracked, the margin indeterminate, thinning out, with the hyphae interwoven; in section 200–1000  $\mu$  thick, not colored, composed of suberect, densely interwoven, hyaline hyphae about 1–2  $\mu$  in diameter, not incrustated; no gloeocystidia; curved ends of the hyphae or their branches form the surface of the hymenium and are about  $\frac{1}{2}$ –1  $\mu$  in diameter; spores white in spore collection,  $4\text{--}5\frac{1}{2} \times 2\text{--}3 \mu$ .

Fructifications 4–12 cm. long, 2–4 cm. wide.

On roots of living apple and blackberry plants, on the ground, and broadly effused on rotting logs of frondose and coniferous species. Canada to Texas and westward to the Pacific coast, in West Indies and in Japan. Throughout the year. Common.

*C. galactinum* resembles *C. portentosum* in aspect but has a more erect hyphal structure and is usually not at all stratose and with substance not colored. Both species have a hymenial surface composed of fine, curved hyphal branches, but the spores of *C. galactinum* are smaller and ellipsoid and those of *C. portentosum* spherical. The mycelium of *C. galactinum* was collected as a parasitic root rot on the roots of young apple trees and blackberry bushes and developed mature fructifications. The collector's data on the type specimen of this species is "In radicibus ad latera fossarum."

Specimens examined:

Exsiccati: Ravenel, Fungi Car. 4: 15, under the name *Corticium calceum*.

Canada: J. Macoun, 26, 31, 111; Lower St. Lawrence Valley, J. Macoun, 4, 9, 35, 83.

Ontario: Lake Rosseau, E. T. & S. A. Harper, 638, 640; Nixon, J. Dearness, 1023 (in Mo. Bot. Gard. Herb., 22732); Ottawa, J. Macoun, 56, 248, in part; Temagami, H. von Schrenk (in Mo. Bot. Gard. Herb., 57053).

Maine: New Limerick, H. von Schrenk, 62 (in U. S. Dept. Agr. Herb. and Burt Herb.); Piscataquis County, W. A. Murrill, 1881 (in N. Y. Bot. Gard. Herb., Mo. Bot. Gard. Herb., 61423, and Burt Herb.).

New Hampshire: Chocorua, W. G. Farlow (in Mo. Bot. Gard. Herb., 19544); North Conway, L. O. Overholts, 4555, 4584 (in Mo. Bot. Gard. Herb., 55635, 55634).

Vermont: Grand View Mt., E. A. Burt; Little Notch, E. A. Burt; Middlebury, E. A. Burt, five gatherings.

New York: Arkville, W. A. Murrill (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61362, 61363); Cranberry Lake, A. H. W. Povah, 772 (in Mo. Bot. Gard. Herb., 3730); East Galway, E. A. Burt; Floodwood, E. A. Burt, C. H. Peck, 12; Forestburgh, C. H. Peck, comm. by N. Y. State Mus. Herb. (in Mo. Bot. Gard. Herb., 56049); Freeville, G. F. Atkinson,

- 18186; Gansevoort, *C. H. Peck*, comm. by N. Y. State Mus. Herb. (in Mo. Bot. Gard. Herb., 55982); Ithaca, *G. F. Atkinson*, 2869, 4898; Jenkinsville, *S. H. Burnham*, 40 (in Mo. Bot. Gard. Herb., 54452); Karner, *H. D. House*, comm. by N. Y. State Mus. Herb. (in Mo. Bot. Gard. Herb., 55197); Lake Placid, *W. A. & E. L. Murrill*, 270 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61578); North Elba, *C. H. Peck*, 12, and (in N. Y. State Mus. Herb., T 26, and Mo. Bot. Gard. Herb., 54652); Oneida, *H. D. House*, comm. by N. Y. State Mus. Herb. (in Mo. Bot. Gard. Herb., 57414); Pompey, *L. M. Underwood*, 25, 107, 357 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61432, 61431, 61575); West Fort Ann, *S. H. Burnham*, 13, in part (in Mo. Bot. Gard. Herb., 54505); White Plains, *L. M. Underwood* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61574).
- Pennsylvania: Mt. Gretna, *E. A. Burt*; State College, *L. O. Overholts*, 4711 (in Mo. Bot. Gard. Herb., 56116).
- Virginia: Woodstock, *C. L. Shear*, 1195.
- South Carolina: *H. W. Ravenel*, in *Ravenel, Fungi Car.* 4: 15, on pine, and type (in *Fries Herb.*, and *Curtis Herb.*, 1601).
- Florida: *W. W. Calkins* (in U. S. Dept. Agr. Herb., and *Burt Herb.*); *Starke, C. L. Shear*, 2904 (in Mo. Bot. Gard. Herb., 15311); Tallahassee, *E. Bartholomew*, 5708 (in Mo. Bot. Gard. Herb., 44255).
- Louisiana: Bogalusa, *C. J. Humphrey*, 5516; St. Martinville, *A. B. Langlois*, 607 (in U. S. Dept. Agr. Herb., and *Burt Herb.*), 1762, X.
- Texas: Houston, *H. W. Ravenel*, 268 (in U. S. Dept. Agr. Herb., and *Burt Herb.*).
- West Virginia: Eglon, *C. G. Lloyd*, 02643.
- Ohio: Cincinnati, *A. P. Morgan*, comm. by *Lloyd Herb.*, 2604.
- Illinois: on apple roots, *H. von Schrenk*; River Forest, *E. T. & S. A. Harper*, 655.
- Michigan: Mass, *C. J. Humphrey*, 1583 (in Mo. Bot. Gard. Herb., 10743); Three Lakes, *C. J. Humphrey*, 1602 (in Mo. Bot. Gard. Herb., 17883); Vermilion, *A. H. W. Povah*, 203 (in Mo. Bot. Gard. Herb., 15326).
- Missouri: Grandin, *H. von Schrenk* (in Mo. Bot. Gard. Herb.,

43022); St. Louis, on apple roots, *H. von Schrenk*, three gatherings.

Arkansas: on blackberry roots, *G. M. Darrow* (in Mo. Bot. Gard. Herb., 63734); on apple roots, *H. von Schrenk*; Fordyce, *C. J. Humphrey*, 5812; Womble, *W. H. Long*, 19816, 19838, 19864, 21104 (in Mo. Bot. Gard. Herb., 8958, 8634, 8635, 55144).

Colorado: Golden, *L. O. Overholts*, 1745 (in Mo. Bot. Gard. Herb., 54874).

Montana: Como, *E. E. Hubert*, comm. by *J. R. Weir*, 11959 (in Mo. Bot. Gard. Herb., 63316); Evaro, *J. R. Weir*, 437 (in Mo. Bot. Gard. Herb., 14387); Rexford, *E. E. Hubert*, comm. by *J. R. Weir*, 11977 (in Mo. Bot. Gard. Herb., 63330).

Idaho: Coeur d'Alene, *E. E. Hubert*, comm. by *J. R. Weir*, 12002 (in Mo. Bot. Gard. Herb., 63364); Coolin, *J. R. Weir*, 11504 (in Mo. Bot. Gard. Herb., 63285); Priest River, *J. R. Weir*, 15, and 133, 346 (in Mo. Bot. Gard. Herb., 12119, 7561), and *E. E. Hubert*, comm. by *J. R. Weir*, 12025 (in Mo. Bot. Gard. Herb., 63378); St. Maries, *J. R. Weir*, comm. by *C. J. Humphrey*, 2556 (in Mo. Bot. Gard. Herb., 13030), and *E. E. Hubert*, comm. by *J. R. Weir*, 11997 (in Mo. Bot. Gard. Herb., 63360).

Manitoba: Winnipeg, *G. R. Bisby & I. L. Conner*, 1102 (in Mo. Bot. Gard. Herb., 59038).

British Columbia: Kootenai Mts., near Salmo, *J. R. Weir*, 457, 500, 508, 531, 542 (in Mo. Bot. Gard. Herb., 9122, 21631, 20270, 23118, 14254).

Washington: Chehalis, *C. J. Humphrey*, 6289 (in Mo. Bot. Gard. Herb., 10751); Lake Wilderness, *C. H. Kauffman*, 17 (in Mo. Bot. Gard. Herb., 4674); Renton, *C. J. Humphrey*, 6640; Sedro Woolley, *C. J. Humphrey*, 7568 (in Mo. Bot. Gard. Herb., 10775).

Cuba: Ceballos, *C. J. Humphrey*, 2730 (in Mo. Bot. Gard. Herb., 9083).

Porto Rico: Rio Piedras, *J. A. Stevenson*, 1195, 3224 (in Mo. Bot. Gard. Herb., 6949, 7734).

Japan: Hiroto-Mura, Prov. Awaji, *A. Yasuda*, 24 (in Mo. Bot. Gard. Herb., 55662); Mt. Mikuma, Prov. Awaji, *A. Yasuda*, 17 (in Mo. Bot. Gard. Herb., 55661).

18. *C. calceum* Fries emend. Romell & Burt

*C. calceum* Fries, Epicr. 562. 1838, in part; Hym. Eur. 652. 1874, in part; Sacc. Syll. Fung. 6: 622. 1888, in part.—*Thelephora calcea* Fries var. *glebulosa* Fries, Elench. Fung. 2: 215. 1828.—Not *Peniophora glebulosa* Bresadola, Fungi Trid. 2: 61 pl. 170, f. 2. 1898.

Type: in Fries Herb. and a fragment in Burt Herb.

Fructifications broadly effused, very thin, closely adnate, not at all separable, floccose-membranaceous, white, sometimes becoming ivory-yellow in the herbarium, even, cracking to the substratum into small rectangular masses 1–4 to a mm., the margin farinose; in section 100–200  $\mu$  thick, not colored, with the hyphae erect, densely crowded together and interwoven, somewhat conglutinate, short-celled, 1–1½  $\mu$  in diameter, sometimes with algal cells imbedded; no gloeocystidia nor cystidia; spores hyaline, even, 3–5½  $\times$  1½–2  $\mu$ .

Fructifications 3–20 cm. long, 1–5 cm. wide.

Under side of decaying rails of *Pinus sylvestris* and *P. Strobus*, and on decaying wood of logs of *P. monticola* and *Thuja*. In Sweden and from Vermont and New Jersey to Idaho and British Columbia. July to November. Abundant when found.

Since *C. calceum* var. *glebulosum* is all that now remains under *C. calceum* after the segregation under other names of all other components, no confusion should result from the present proposed restriction of the species *C. calceum*. It may be added that the original description of *C. calceum* applies better to the emended species than to any of the other components withdrawn. Bresadola studied the Friesian type of *Thelephora calcea* var. *glebulosa* and identified it with *Peniophora glebulosa*, a species very common throughout Europe. He shared a portion of his Friesian type with me and accompanied it with notes on microscopic details in which he stated, "Cystidia adsunt sed collapsa." However, no cystidia are present in this fragment, nor in the type in Fries Herb., nor in ample collections of the species made by Romell and myself at the type station, Femsjö. I have not been able to recognize this species in the extensive series of Corticiums received from countries of Europe other than Sweden. Since the species is widely distributed and abundant in northern United

C. subpallidulum de Burt

States, it is possible that it is a North American endemic species which became established in Sweden as an outlying station, comparable with cases of *Stereum rufum*, *Stereum Murrayi*, etc.

Specimens examined:

Exsiccati: Ell. & Ev., N. Am. Fungi, 2807, under the name *Corticium scutellare*; Ell. & Ev., Fungi Col., 104, under the name *Corticium scutellare*.

Sweden: Femsjö, E. Fries, type of *Thelephora calcea* var. *glebulosa* (in Fries Herb., and fragment in Burt Herb.), L. Romell, 185, 211, and Romell & Burt, two gatherings; Stockholm, L. Romell, 321, 322, 324, 325.

Canada: J. Macoun, 1, 34; Lower St. Lawrence Valley, J. Macoun, 57.

Vermont: Middlebury, E. A. Burt, two gatherings.

New York: Bolton, C. H. Peck, 9; Clearwater, G. F. Atkinson, 5046; Floodwood, C. H. Peck, 11; Ithaca, G. F. Atkinson, 941, 22972; Schuylerville, C. H. Peck, 20.

New Jersey: Newfield, J. B. Ellis, in Ell. & Ev., N. Am. Fungi, 2807, and in Ell. & Ev., Fungi Col., 104.

Pennsylvania: State College, L. O. Overholts, 4809 (in Mo. Bot. Gard. Herb., 56119).

Michigan: Mass, C. J. Humphrey, 1662 (in Mo. Bot. Gard. Herb., 17607).

Wisconsin: Lake Glencoe, E. T. & S. A. Harper, 853.

Idaho: Priest River, J. R. Weir, 40, 64, and 6350 (in Mo. Bot. Gard. Herb., 58387).

British Columbia: Kootenai Mts., near Salmo, J. R. Weir, 461, 463, 533 (in Mo. Bot. Gard. Herb., 9119, 12631, 20973).

**19. *C. vescum* Burt, n. sp.**

Type: in Mo. Bot. Gard. Herb.

Fructifications effused, closely adnate, very thin, not at all separable, from white to pale drab-gray in the herbarium, even, not shining, not cracked, the margin thinning out, indeterminate; in section 20–30  $\mu$  thick, not colored, very compact, composed of very short, erect hyphae which terminate in basidia; no gloeocystidia; spores hyaline, even, allantoid,  $4\frac{1}{2} \times \frac{1}{2}$ –1  $\mu$ .

Fructifications up to 6 cm. long, 3 cm. wide.

On decorticated pine limb completely decayed by a brittle, brown rot. Maryland and Alabama. October.

*C. vescum* looks like a thin, whitish or somewhat cinereous wash in water color on the surface of the weathered pine limb. No interwoven hyphal structure is visible under a lens, for the short basal hyphae start out vertically from the substratum and terminate in basidia packed closely together in the hymenium.

Specimens examined:

Maryland: Takoma Park, *C. L. Shear*, 961.

Alabama: Montgomery, *R. P. Burke*, 476, type (in Mo. Bot. Gard. Herb., 57294).

**20. *C. incanum* Burt, n. sp.**

Type: in Burt Herb.

Fructifications effused, very thin, closely adnate, not separable, becoming pearl-gray to mineral-gray in the herbarium, even, waxy, not cracked, the margin thinning out, indeterminate; in section 20–75  $\mu$  thick, not colored, composed of densely interwoven, hyaline hyphae  $2\frac{1}{2}$ –3  $\mu$  in diameter, rarely nodose-septate, not incrusted; no gloeocystidia; basidia simple, with 4 short, blunt sterigmata; spores hyaline, even, about  $3\frac{1}{2}$ –4  $\times$   $1\frac{1}{2}$ –3  $\mu$ .

Fructifications 4–8 cm. long, 1–2 cm. wide.

On bark and wood of dead *Acer* and other frondose limbs. Canada to North Carolina. October and November.

*C. incanum* forms a thin, inseparable coating of mineral-gray color over bark and wood of frondose species usually. The aspect is so similar to that of common *Peniophora cinerea* that it is likely to be passed by as the latter, if examination of microscopic structure is not made.

Specimens examined:

Canada: *J. Macoun*, 36; Ottawa, *J. Macoun*, 32, 34.

Vermont: Middlebury, *E. A. Burt*.

New York: Karner, *H. D. House*, comm. by N. Y. State Mus. Herb. (in Mo. Bot. Gard. Herb., 54384).

New Jersey: Belleplain, *C. L. Shear*, 1249, type.

North Carolina: Chapel Hill, *J. N. Couch*, 4225, comm. by W. C. Coker, under the name *C. ochraceo-niveum* (in Mo. Bot. Gard. Herb., 57412).

21. *C. canum* Burt, n. sp.

Type: in Burt Herb.

Fructifications effused, thin, hypochnoid, tender, not separable, whitish to pale pinkish buff in the herbarium, even, with the hymenium fibrillose under a lens rather than in the form of a continuous pellicle, the margin thinning out, arachnoid; in section 100–180  $\mu$  thick, not colored, composed of lax, loosely interwoven hyphae  $2\frac{1}{2}$   $\mu$  in diameter, thin-walled, nodose-septate, not incrustated, bearing a more compact hymenium; no gloeocystidia; spores hyaline, even,  $3-4 \times 1\frac{1}{2}-2$   $\mu$ .

Fructifications 3–5 cm. long,  $\frac{1}{2}$ – $1\frac{1}{2}$  cm. wide.

On decaying wood and bark of conifers. Canada to Louisiana and in Washington. September to October. Infrequent.

*C. canum* belongs in the group with *C. centrifugum* and *C. pelliculare* but differs from both in more hypochnoid structure and smaller spores. The hyphae are nodose-septate and not incrustated.

Specimens examined:

Canada: J. Macoun, 13, type, and 86, in part.

New York: Ithaca, G. F. Atkinson, 2563.

Maryland: Takoma Park, C. L. Shear, 1063.

Louisiana: St. Martinville, A. B. Langlois, 168, comm. by Lloyd Herb., 3046.

Idaho: Coolin, J. R. Weir, 11101 (in Mo. Bot. Gard. Herb., 63391); Priest River, J. R. Weir, 21.

British Columbia: Salmo, Kootenai Mts., J. R. Weir, 447 (in Mo. Bot. Gard. Herb., 21800).

Washington: Hoquiam, C. J. Humphrey, 6375, 6413.

22. *C. centrifugum* (Lév.) Bresadola, Ann. Myc. 1: 96. 1903; v. Höhnelt, Ann. Myc. 3: 188. 1905; Bourdot & Galzin, Soc. Myc. Fr. Bul. 27: 240. 1911.

*Rhizoctonia centrifuga* Lévillé, Ann. Sci. Nat. Bot. II. 20: 225. 1843.—*Hypochnus centrifugus* Tulasne, Fung. Carp. 1: 113. 1861; Sacc. Syll. Fung. 6: 654. 1888.—*Corticium decipiens* v. Höhnelt & Litschauer, K. Akad. Wiss. Wien Sitzungsber. 117: 1116. 1908.

Fructifications effused, very thin, arachnoid, forming a con-

= *C. pelliculare* Burt  
see *C. pelliculare*

tinuous hymenial pellicle, fragile, white, becoming pale olive-buff in the herbarium, even, the margin arachnoid or byssoid; in section 75–150  $\mu$  thick, not colored, with the hyphae loosely interwoven, thin-walled, not incrustated, usually 2–3  $\mu$  in diameter, sometimes with a few coarser and up to 6  $\mu$  in diameter along the substratum, only rarely nodose-septate; no gloeocystidia; spores hyaline, even, ellipsoidal,  $4-8 \times 2\frac{1}{2}-4 \mu$ .

Fructifications 2–6 cm. long, 1–3 cm. wide.

On decaying wood and leaves and fallen branches. Common in Europe, infrequent from Canada to Louisiana and westward to the Pacific and in the West Indies. June to February.

*C. centrifugum* is related to *C. arachnoideum* and *C. pelliculare*. Its more elongated spores, thinner and less arachnoid fructifications, and hyphae with only very few clamp connections separate it from *C. arachnoideum*, while *C. pelliculare* becomes more yellow in the herbarium, is likely to show some hyphal incrustation, and has rather smaller spores and a more compact hymenium. According to the original description *C. decipiens* differs by not having clamp connections but they are certainly present in the authentic specimen communicated by Litschauer.

Specimens examined:

Exsiccati: Ell. & Ev., Fungi Col., 309, under the name *Corticium arachnoideum*.

Sweden: *L. Romell*, 76; Stockholm, *L. Romell*, 60, 61, 168, 296, 348.

Germany: *W. Brinkmann*, comm. by Bresadola.

Austria: Klosterberg, Tirol, *V. Litschauer*, and another specimen under the name *C. decipiens*, determined and comm. by Litschauer.

Canada: Ottawa, *J. Macoun*, 49, 52.

Maine: Kittery Point, *R. Thaxter* (in Mo. Bot. Gard. Herb., 57606).

New Hampshire: Chocorua, *W. G. Farlow*; Shelburne, *W. G. Farlow*, 2.

New York: East Galway, *E. A. Burt*; Ithaca Flats, *C. O. Smith*, comm. by *G. F. Atkinson*, 8226; Karner, *H. D. House* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 54350).

New Jersey: Newfield, *J. B. Ellis*, in Ell. & Ev., Fungi Col., 309.

Pennsylvania: State College, *L. O. Overholts*, 3630 (in Mo. Bot. Gard. Herb., 54698).

District of Columbia: Takoma Park, *C. L. Shear*, 1347.

Louisiana: St. Martinville, *A. B. Langlois*, ay.

Manitoba: Stony Mountain, *A. H. R. Buller*, 900 (in Mo. Bot. Gard. Herb., 58999); Winnipeg, *G. R. Bisby*, 1342 (in Mo. Bot. Gard. Herb., 60551).

Washington: Bingen, *W. N. Suksdorf*, 914.

Oregon: Corvallis, *S. M. Zeller*, 2066 (in Mo. Bot. Gard. Herb., 58767).

California: Massack, *A. S. Rhoads*, 18 (in Mo. Bot. Gard. Herb., 56987).

Jamaica: Castleton Gardens, *W. A. & E. L. Murrill*, 67, comm. by N. Y. Bot. Gard. Herb.; Chester Vale, *W. A. & E. L. Murrill*, 372, comm. by N. Y. Bot. Gard. Herb.

**23. *C. Atkinsonii* Burt, n. sp.**

Type: in Burt Herb.

Fructifications effused, adnate, thin, small pieces separable when moistened, white, even, waxy, not cracked, the margin thinning out, with hyphae interwoven; in section about 150  $\mu$  thick, not colored, composed of interwoven, branching, thin-walled, occasionally nodose-septate hyphae 3  $\mu$  in diameter, not incrusted, which have in the middle and subhymenial region an additional branched system of branches not more than 1  $\mu$  in diameter and bearing short acicular branchlets; no gloeocystidia; basidia simple, usually 4 sterigmata but rarely 5 or 6; spores hyaline, even,  $4\frac{1}{2} \times 2-2\frac{1}{2}$   $\mu$ .

Fructifications 1-3 cm. long, 1-2 cm. wide.

On decaying, charred frondose wood and on *Populus*. New York and Louisiana. November and January.

*C. Atkinsonii* has snow-white color, waxy surface and small spores. The noteworthy character separating it from other white species is the system of delicate hyphal branches, so abundant in the middle and subhymenial regions of the fructification that they mask the outlines of the usual hyphae there and so fine that on first impression they seem to be the walls of collapsed hyphae. The mode of branching is not exactly that of *C. in-*

*vestiens* and *C. jamaicense* but a comparable type of hyphal differentiation. The great distance between the two stations leads me to suspect that *C. Atkinsonii* is more frequent than indicated by the collections in which the distinctive branching was observed.

Specimens examined:

New York: Altamont, *E. A. Burt*; Ithaca, *G. F. Atkinson*, 2558, type.

Louisiana: *A. B. Langlois*, 246, comm. by U. S. Dept. Agr. Herb.

**24. *C. subnullum* Burt, n. sp.**

Type: in Mo. Bot. Gard. Herb.

Fructifications effused, closely adnate, very thin, cartridge-buff to olive-buff in the herbarium, hypochnoid, not forming a continuous hymenium but with the basidia in more or less connected tufts of about 3–5 to the mm., farinaceous, the margin similar; in section 30–45  $\mu$  thick, not colored, composed of loosely arranged, hyaline hyphae 2–2½  $\mu$  in diameter, thin-walled, not incrusted, not nodose-septate; no gloeocystidia; spores hyaline, even, globose, 2½  $\mu$  in diameter, borne 4 to a basidium.

Fructifications 3–7 cm. long, 2–3 cm. wide.

On bark of decaying logs of *Populus* sp. British Columbia. July.

When *C. subnullum* becomes better known from additional collections, it may become necessary to transfer it to another genus, but the present gathering favors the view that it is a *Corticium* somewhat lacking basidia so that the hymenium becomes discontinuous. This character, occurrence on poplar bark, small spores, and general aspect of an olive-buff Hyphomycete are good distinctive characters.

Specimens examined:

British Columbia: Sidney, *J. Macoun*, 30, type (in Mo. Bot. Gard. Herb., 63776).

**25. *C. crustulinum* Burt, n. sp.**

Type: in Mo. Bot. Gard. Herb.

Fructifications effused, thin, tender, separable, with the substance whitish, dry, soft and cottony, and the hymenium warm

buff in the herbarium, even, pelliculose, brittle, not shining, the margin whitish, continuous with the substance, fimbriate; in section  $160\ \mu$  thick, not colored, composed of a layer next the substratum of loosely interwoven, hyaline, thin-walled hyphae  $2\ \mu$  in diameter, nodose-septate, not incrustated, and of a compactly interwoven, thin hymenium; no gloeocystidia; basidia  $6 \times 3\ \mu$ , with 4 sterigmata; spores hyaline, even, subglobose,  $3 \times 2-3\ \mu$ , copious.

Fructifications 5 cm. long, 2-3 cm. wide.

On very rotten frondose wood. Porto Rico. July.

*C. crustulinum* is characterized by the loosely attached, whitish-margined fructifications with yellowish hymenium borne on a white, cottony substance. The small hyphae, small basidia, and small spores are good confirmatory characters. We have no closely related species.

Specimens examined:

Porto Rico: Rio Piedras, *J. A. Stevenson*, 2914, type (in Mo. Bot. Gard. Herb., 3130).

26. *C. tessulatum* Cooke, *Grevillea* 6: 132. 1878; Sacc. Syll. Fung. 6: 619. 1888; Masee, Linn. Soc. Bot. Jour. 27: 136. 1890.

Type: type distribution in Ravenel, *Fungi Am.*, 127.

Fructifications effused, adnate, thin, somewhat membranaceous, tender, small pieces separable, in the herbarium becoming naphthalene-yellow, with central parts light ochraceous buff, even, contracting greatly in drying, and cracking into rectangular masses 1-4 mm. in diameter separated by fissures 1-2 mm. wide, with some of the white silky subiculum clinging to the substratum, the margin whitish, fibrillose; in section  $150-200\ \mu$  thick, not colored, composed of loosely interwoven, very thin-walled and collapsing hyphae  $4\ \mu$  in diameter, abundantly nodose-septate, not incrustated; no gloeocystidia; spores hyaline, even,  $4-4\frac{1}{2} \times 3\ \mu$ , few found.

Fructifications 2-4 cm. in diameter.

On pine and spruce bark on the ground. Canada to South Carolina, and in Idaho and Arizona. May to October. Infrequent.

*C. tessulatum* is somewhat suggestive of *C. Berkeleyi* in aspect

but is colored differently, tending towards light ochraceous-buff in the more central parts of the fructification; this color, occurrence on old pine and spruce, the wide cracks from drying, and loose attachment to substratum and tendency to scale away from it of the rectangular masses of the dried fructification are helpful characters in recognizing the species. *C. illaqueatum*, occurring on *Castanea* in France, is closely related.

Specimens examined:

Exsiccati: Ravenel, *Fungi Am.*, 127, type distribution.

Canada: Lower St. Lawrence Valley, *J. Macoun*, 71, 75; Ontario, Temagami, *H. von Schrenk* (in *Mo. Bot. Gard. Herb.*, 57051).

Maine: Penobscot County, *W. A. Murrill*, 1821 (in *N. Y. Bot. Gard. Herb.*, *Burt Herb.*, and *Mo. Bot. Gard. Herb.*, 59676).

New Hampshire: Chocorua, *W. G. Farlow*, 10, and two other gatherings.

Vermont: Middlebury, *E. A. Burt*.

New York: Osceola, *C. H. Peck* (in *N. Y. State Mus. Herb.*, and *Mo. Bot. Gard. Herb.*, 59674, 59676).

Maryland: Takoma Park, *C. L. Shear*, 1066.

South Carolina: Aiken, *H. W. Ravenel*, in *Ravenel, Fungi Am.*, 127.

Idaho: Addie, *E. E. Hubert*, comm. by *J. R. Weir*, 11989 (in *Mo. Bot. Gard. Herb.*, 63352).

Arizona: Flagstaff, *W. H. Long*, 19494 (in *Mo. Bot. Gard. Herb.*, 44768, 44769); Interior Basin, San Francisco Peaks, *W. H. Long*, 21309, in part (in *Mo. Bot. Gard. Herb.*, 54890).

27. *C. Stevensonii* Burt, n. sp.

Type: in *Mo. Bot. Gard. Herb.*

Fructifications effused, rather thick, fleshy-membranaceous, small pieces separable, becoming cartridge-buff to cream-buff in the herbarium, perhaps white when growing, ceraceous, slightly colliculose, becoming somewhat cracked in drying, the margin narrow, similar; in section 400–450  $\mu$  thick, not colored, with an incrusted subhymenial zone, the hyphae 3–3½  $\mu$  in diameter, not nodose-septate, rather thick-walled and rigid, loosely interwoven and rising obliquely to the base of the compact subhymenium, conspicuously incrusted for a length of about 30  $\mu$  in the incrusted

zone and about  $6\ \mu$  in diameter over the incrustation; no gloeocystidia; spores copious, hyaline, even,  $6 \times 4\text{--}4\frac{1}{2}\ \mu$ .

Fructifications in fragments 1–3 cm. long, 1–2 cm. wide.

On badly decayed frondose wood. Porto Rico. December.

This species resembles in aspect *Peniophora crenea* and *P. mutata*, and its hyphae are similarly coarse and loosely arranged but both cystidia and gloeocystidia are lacking. The incrustated zone at the base of the subhymenium is about  $30\ \mu$  thick and very characteristic. Each hypha assumes incrustation upon entering this zone, has position parallel to the other hyphae, and is devoid of incrustation beyond the zone.

Specimens examined:

Porto Rico: Rio Piedras, Palo Seco, La Isabell Grove, J. A. Stevenson, 3523, type (in Mo. Bot. Gard. Herb., 6635).

28. *C. lacteum* Fries, Epicr. 560. 1838; Hym. Eur. 649. 1874; Sacc. Syll. Fung. 6: 610. 1888; Masee, Linn. Soc. Bot. Jour. 27: 132. 1890.—Not *C. lacteum* of Bresadola, v. Höhnelt & Litschauer, nor probably of Bourdot & Galzin, and Rea.

*Thelephora lactea* Fries, Syst. Myc. 1: 452. 1821; Elenchus Fung. 1: 205. 1828.—*Corticium pellicula* (Fr. ?) Karsten, Soc. pro Fauna et Fl. Fenn. Meddel. 11: 5. 1885.

Type: in Fries Herb.—the specimen determined by E. Fries. Authentic specimen in better condition in Kew Herb.—the cream-colored fructification collected by Lbd., Svex. Soderin, Oct.

Fructifications effused, thin, membranaceous, tender, small pieces separable, becoming cream-colored to cinnamon-buff in the herbarium, even, more or less cracked, the margin whitish, fibrillose; in section  $150\text{--}300\ \mu$  thick, not colored, with the hyphae densely and longitudinally arranged along the substratum and then curving upward to the hymenium,  $2\frac{1}{2}\text{--}4\ \mu$  in diameter, incrustated in the subhymenial region, occasionally nodose-septate; no gloeocystidia nor vesicular bodies; spores hyaline, even, subglobose, about  $5\text{--}6\frac{1}{2} \times 5\text{--}6\ \mu$ , pointed at the base.

Fructifications 3–8 cm. long, 2–5 cm. wide.

On decaying wood and limbs of coniferous and frondose species and on the ground. In Europe and in northern United States

and Canada from Massachusetts westward to the Pacific states. May to November. Occasional.

It has been necessary to depart from the conflicting concepts of *C. lacteum*, and base the species on the presumably oldest existing specimen collected and determined by Fries and preserved in his herbarium under the name of *Thelephora lactea*. Other and more recent specimens were referred by Fries to *Corticium lacteum*, the genus *Corticium* not being used by Fries until the publication of his 'Epicrasis.' These more recent specimens are of various species as might be expected, for the exact methods of the present day in the study of resupinate Hymenomycetes were not then used, and it is probable that these later specimens have caused the confusion in current concepts of *C. lacteum*. It is fortunate that one of these later specimens, named by Fries, agrees with the original specimen, is in better condition than the original specimen, and is preserved in Kew Herbarium where it is convenient for comparison. *C. lacteum*, as understood from these specimens, belongs in a group of species of similar aspect having globose spores about 6  $\mu$  in diameter. The other members of this group are *C. radiosum*, and *C. abeuns*. *C. pelliculare* has the same aspect as the others named but its spores are not globose. When one knows any one of the above group of species the other species should be readily recognized as they are found, for *C. lacteum* has rather coarse, loosely arranged, more or less granule-incrusted hyphae, and lacks gloeocystidia and vesicular bodies; *C. abeuns* has wholly immersed gloeocystidia of the usual kind; and *C. radiosum* has vesicular organs which are at first like those of *C. polyonium* but become much more inflated and with highly attenuated wall, and finally perhaps are shown only by vesicular spaces between the massed hyphae.

Specimens examined:

Sweden: type, under the name *Thelephora lactea* (in Herb. Fries); Svex. Söderm., Lindblad, determined by E. Fries as *Corticium lacteum* (in Kew Herb.); Stockholm, L. Romell, 114, 179, 327.

Finland: Mustiala, P. Karsten, comm. by Karsten under the name *Corticium pellicula* Fr.?

France: Fautrey, determination as *Corticium lacteum* approved by Patouillard for Lloyd, comm. by C. G. Lloyd, 4368.

Canada: *J. Macoun*, 29, and an unnumbered specimen from Ellis Herb., comm. by W. G. Farlow (in Mo. Bot. Gard. Herb., 44640); Ironsides, *J. Macoun*, 286 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61348); Lower St. Lawrence Valley, *J. Macoun*, 45, 47, 90; Ottawa, *J. Macoun*, 57, and 165 and 349 (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 56052, 55921).

Vermont: Middlebury, *E. A. Burt*, 2 gatherings.

Massachusetts: Magnolia, *W. G. Farlow*.

New York: Albany, *H. D. House & J. Rubinger*, comm. by N. Y. State Mus. Herb. (in Mo. Bot. Gard. Herb., 7462); Altamont, *E. A. Burt*; Freeville, *G. F. Atkinson*, 2586; Hague, *C. H. Peck*, 11; Ithaca, *G. F. Atkinson*, 2870, 14100; Sandlake, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55748); Warrensburg, *C. H. Peck*, comm. by N. Y. State Mus. Herb. (in Mo. Bot. Gard. Herb., 55976).

Pennsylvania: Carbondale, *E. A. Burt*.

Alabama: Montgomery, *R. P. Burke*, 220 (in Mo. Bot. Gard. Herb., 57094).

Ohio: Cincinnati, *A. P. Morgan*, comm. by Lloyd Herb., 2617.

Michigan: Ann Arbor, *C. H. Kauffman*, 24, 38 (in Mo. Bot. Gard. Herb., 17172, 18617); New Richmond, *C. H. Kauffman*, 25, 33, 42 (in Mo. Bot. Gard. Herb., 17035, 20030, 22870).

Wisconsin: Blue Mounds, *A. O. Stucki*, 37.

Illinois: Peoria, *C. J. Humphrey*, 1990 (in Mo. Bot. Gard. Herb., 17518).

Idaho: Bonanza, *G. G. Hedgcock*, comm. by C. J. Humphrey, 2557, in part; Coolin, *J. R. Weir*, 11574 (in Mo. Bot. Gard. Herb., 63302).

Colorado: Uncompaghe National Forest, *G. G. Hedgcock*, comm. by C. J. Humphrey, 2546.

British Columbia: Sidney, *J. Macoun*, 84 (in Mo. Bot. Gard. Herb., 55346).

Washington: Chiquash Mountains, *W. N. Suksdorf*, 842; Seattle, *W. A. Murrill*, 151, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 55727).

California: Massack, *A. S. Rhoads*, 21 (in Mo. Bot. Gard. Herb., 56990).

29. *C. subgiganteum* Berkeley, Grevillea 2: 3. 1873; Sacc. Syll. Fung. 6: 632. 1888; Lyman, Boston Soc. Nat. Hist. Proc. 33: 151. pl. 18, f. 2-21, pl. 26, f. 137. 1907.

*Peniophora subgigantea* (Berk.) Masee, Linn. Soc. Bot. Jour. 25: 142. 1889.—*Michenera artocreas* Berk. & Curtis, Linn. Soc. Bot. Jour. 10: 333. 1868; Sacc. Syll. Fung. 6: 653. 1888; Patouillard, Soc. Myc. Fr. Bul. 7: 42. pl. 4, f. 1-5. 1891; Essai Taxon. 67. 1900; Peirce, Torr. Bot. Club Bul. 17: 305. pl. 110, f. k-n. 1890; Lyman, Boston Soc. Nat. Hist. Proc. 33: 157. pl. 18, f. 6-21, pl. 26, f. 137. 1907.—An *Corticium gilvidum* Bresadola, Ann. Myc. 18: 46. 1920?

Type: in Kew Herb. and Farlow Herb.

Basidiosporic stage broadly effused, adnate, thick, membranaceous, separable in small pieces when moist, drying light buff to light ochraceous-buff, even, glabrous, not cracked, the margin whitish, sometimes buff when old; in section 500-1000  $\mu$  thick, not colored, with the hyphae densely interwoven, about 2-2½  $\mu$  in diameter, not incrustated, not nodose-septate; no gloeocystidia; paraphyses with pointed tips; basidia large with 4 sterigmata usually; basidiospores hyaline, even, globose or subglobose, 14-19  $\mu$  in diameter or 14-19  $\times$  12-16  $\mu$ .

Chlamydosporic or *Michenera* fructifications disk-shaped, concave, drying snuff-brown, cracked, the margin acute, thick, white on its elevated side; in section 1-2 mm. thick, composed of a thick basal layer of densely interwoven hyphae about 2  $\mu$  in diameter which terminate in sporiferous ends and branches densely crowded together in the concave layer at surface of the fructifications; sporophores consist of each a single chlamydospore terminating in a slender, flexuous, tapering terminal appendage up to 10-50  $\mu$  long; chlamydospores ovoid, even, 12-20  $\times$  10-15  $\mu$ .

Basidiosporic fructifications 2-15 cm. long, 1-4 cm. wide; *Michenera* fructifications 6-8 mm. in diameter.

On bark of dead limbs of *Acer rubrum*, *Magnolia*, and *Liriodendron*. In swamps in the Atlantic states from Canada to Cuba. July to February. Occasional.

Fructifications of the perfect stage bear some resemblance in general aspect to those of *C. portentosum* but are readily distinguished by the much larger spores. When growing on the

same twigs the perfect fructifications occur normally on the under side of the twigs with the imperfect ones opposite on the upper side.

Specimens examined:

Exsiccati: Ell. & Ev., N. Am. Fungi, 3102, under the name *Corticium ochroleucum* var. *resupinatum*.

Canada: Quebec, Hull, *J. Macoun*, 149; Ontario, Ottawa, *J. Macoun*, comm. by N. Y. State Mus. Herb. (in Mo. Bot. Gard. Herb., 55802).

Maine: Kittery Point, *R. Thaxter*, comm. by G. R. Lyman.

New Hampshire: Chocorua, *W. G. Farlow* (in Mo. Bot. Gard. Herb., 55580); North Conway, comm. by L. O. Overholts, 5062 (in Mo. Bot. Gard. Herb., 56354).

Vermont: Middlebury, *C. G. Lloyd*, 10623 (in Mo. Bot. Gard. Herb., 44639).

Connecticut: near Moosup River, *J. L. Sheldon*, comm. by C. J. Humphrey, 2526 (in Mo. Bot. Gard. Herb., 18559).

New York: Karner, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55782).

New Jersey: Newfield, *J. B. Ellis*, comm. by Lloyd Herb., 1442, by Farlow Herb. (in Mo. Bot. Gard. Herb., 55584), and in Ell. & Ev., N. Am. Fungi, 3102.

Virginia: Clarendon, *W. H. Long*, 12715 (in Mo. Bot. Gard. Herb., 55060).

North Carolina: Transylvania County, *W. A. Murrill & H. D. House*, 423, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 56586).

South Carolina: Aiken, *H. W. Ravenel*, 1669, type (in Kew Herb. and Farlow Herb.).

Alabama: Auburn, *G. F. Atkinson*, 2364.

Cuba: *C. Wright*, type of *Michenera artocreas* (in Farlow Herb.).

30. *C. ceraceum* Berk. & Rav. in Ravenel, Fungi Car. Exs. 3. 29. 1855, without description; Masee, Linn. Soc. Bot. Jour. 27: 150. 1890; v. Höhnelt & Litschauer, K. Akad. Wiss. Wien Sitzungsber. 116: 785. text f. 6. 1907.

*Corticium molle* Berk. & Curtis, Linn. Soc. Bot. Jour. 10: 336. 1868; Grevillea 1: 180. 1873.—Not *Corticium molle* Fries.—*C. armeniacum* Sacc. Syll. Fung. 6: 637. 1888.

Type: type distribution in Ravenel, *Fungi Car.* 3: 29.

Fructifications broadly effused, ceraceous-fleshy, drying membranaceous, small pieces separable when moistened, becoming cinnamon-buff to army-brown in the herbarium, even, shining, not cracking, the margin paler, narrow, with hyphae interwoven; in structure 100–400  $\mu$  thick, not colored, composed of erect, densely interwoven, agglutinate, thick-walled hyphae  $2\frac{1}{2}$ –3  $\mu$  in diameter, not incrustated, rarely, if at all, nodose-septate; no gloecystidia; spores hyaline, even, flattened on one side,  $10$ – $16 \times 4\frac{1}{2}$ –7  $\mu$ .

Fructifications 1–10 cm. long, 1–3 cm. wide; sometimes confluent over areas up to 1 m. long.

On decaying trunks of frondose species. New Jersey to Mexico, in the West Indies, and in South Africa. Throughout the year. Uncommon.

*C. ceraceum* varies in the thickness of its fructifications which are usually cinnamon to ochraceous-orange in color and sometimes become very large. The spores are so very large that they afford a good distinctive character but are most likely to be found in crushed preparations of the hymenium.

Specimens examined:

Exsiccati: Ellis, *N. Am. Fungi*, 607; Ravenel, *Fungi Am.*, 453;

*Fungi Car.* 3: 29, type distribution.

New Jersey: Newfield, *J. B. Ellis*, comm. by Lloyd Herb.

Virginia: Woodstock, *C. L. Shear*, 1193.

North Carolina: Biltmore Estate, *W. A. Murrill* (in *N. Y. Bot. Gard. Herb.*, and *Mo. Bot. Gard. Herb.*, 61351).

South Carolina: *H. W. Ravenel*, in Ellis, *N. Am. Fungi*, 607, and type in Ravenel, *Fungi Car.* 3: 29; Aiken, *H. W. Ravenel*, in Ravenel, *Fungi Am.*, 453; Black Rock, *H. W. Ravenel*, 1261 (in Curtis Herb.).

Alabama: Montgomery, *R. P. Burke*, 133 (in *Mo. Bot. Gard. Herb.*, 10951).

Louisiana: Lafayette County, *A. B. Langlois*, 1467; St. Martinville, *A. B. Langlois*, 41, comm. by Lloyd Herb., and 2709, and *G.*

Mexico: Orizaba, *W. A. & E. L. Murrill*, 789, comm. by *N. Y. Bot. Gard. Herb.* (in *Mo. Bot. Gard. Herb.*, 54615).

Cuba: *C. Wright*, type of *Corticium molle* B. & C. (in Curtis Herb., 202); Alto Cedro, *Earle & Merrill*, comm. by N. Y. Bot. Gard. Herb.

Africa: locality not given, *P. A. van der Bijl*, 13 (in Mo. Bot. Gard. Herb., 58810).

**31. *C. Bambusae* Burt, n. sp.**

Type: in Burt Herb., and Farlow Herb.

Fructifications small, becoming confluent, effused, adnate, very thin, tender, small pieces separable, cartridge-buff, even, not shining, somewhat cracked, the margin free in some places; in section 80–120  $\mu$  thick, not colored, with the hyphae about  $2\frac{1}{2}$   $\mu$  in diameter, not incrustated, not nodose-septate, arranged longitudinally along the substratum and sending out lateral branches to form the hymenium; no gloeocystidia; basidia simple,  $40 \times 10$   $\mu$ , with 4 sterigmata; spores hyaline, even,  $14-18 \times 8-9$   $\mu$ , pointed at both ends, copious.

Fructifications 1–3 mm. in diameter, becoming confluent over an area 4 cm. long,  $1-1\frac{1}{2}$  cm. wide.

On bamboo. West Indies and Venezuela. Very common.

The small, cartridge-buff fructifications clustered together and becoming confluent over the hard cortex of culms of bamboo and the unusually large spores are good distinctive characters for recognition of this species.

Specimens examined:

Trinidad: Maravel, *R. Thaxter*, type, comm. by W. G. Farlow, 19.

**32. *C. cremoricolor* Berk. & Curtis, Grevillea 1: 180. 1873; Sacc. Syll. Fung. 6: 615. 1888.—Masse, Linn. Soc. Bot. Jour. 27: 133. 1890 (spelled *cremicolor*).**

Type: in Kew Herb. and Farlow Herb., labelled *Corticium cremicolor* B. & C.

Fructifications broadly effused, rather thick, membranaceous, small pieces separable when moistened, becoming cream-colored and pinkish buff to wood-brown in the herbarium, cracking into areolae 2–3 mm. in diameter and with a distinctly radial arrangement of the principal cracks frequently, more or less colliculose with broad, slightly elevated granules, the margin narrow, fibril-

lose, sometimes radiate; in section 200–800  $\mu$  thick, not colored, with hyphae somewhat longitudinally interwoven and then ascending to a compact hymenium, 2–3  $\mu$  in diameter, rarely larger, not incrustated but mixed with more or less mineral matter; no gloeocystidia; spores hyaline, even, flattened on one side, 8–12  $\times$  5–8  $\mu$ .

Fructifications 2–10 cm. long, 1½–3 cm. wide, often confluent.

On bark of decaying *Quercus* and other frondose species. Throughout Canada and the United States. April to December. Frequent.

*C. cremoricolor* is so similar to *C. hydnans* in aspect that the much larger spores of *C. cremoricolor* afford the best character for separation of these two species. *C. cremoricolor* is less tubercular, however, thicker, and usually with cracks radiating from the center of the fructification. *C. anthracophilum* Bourd. is closely related in structure.

Specimens examined:

Canada: *J. Macoun*, 19.

Massachusetts: Cambridge, *L. M. Underwood*, 1001 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 57340).

New York: Ithaca, *H. S. Jackson*, comm. by Cornell Univ. Herb., 14391; Onondaga Valley, *L. M. Underwood* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61388).

New Jersey: Belleplain, *C. L. Shear*, 1247, Newfield, *J. B. Ellis*, comm. by Farlow Herb. (in Mo. Bot. Gard. Herb., 44636).

Pennsylvania: Ohio Pyle, *W. A. Murrill*, 1076, 1133 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61586, 61579); Reitz Gap, *L. O. Overholts*, 4633 (in Mo. Bot. Gard. Herb., 56118); State College, *L. O. Overholts & C. R. Orton*, comm. by *L. O. Overholts*, 4723 (in Mo. Bot. Gard. Herb., 56115); Trexlertown, *W. Herbst*, comm. by Lloyd Herb., 2227; Whitehaven, *G. F. Atkinson*, 8654.

Maryland: Takoma Park, *C. L. Shear*, 1075.

District of Columbia: Washington, *C. L. Shear*, 1240, 1259.

Florida: *W. W. Calkins*, comm. by Farlow Herb. (in Mo. Bot. Gard. Herb., 44633).

Alabama: *Peters*, type (in Kew Herb., and Curtis Herb., 5205).

Texas: Houston, *H. W. Ravenel*, 271, comm. by U. S. Dept. Agr.

- Herb. This is the *Corticium lactescens* of Cooke's Fungi of Texas; Quitman, *W. H. Long*, 12092 (in Mo. Bot. Gard. Herb., 55047).
- Ohio: *C. G. Lloyd*, 3821, comm. by Farlow Herb., 166 (in Mo. Bot. Gard. Herb., 55261), and 3821 and 3907.
- Indiana: Scottsburg, *J. R. Weir*, 376 (in Mo. Bot. Gard. Herb., 17186).
- Illinois: Christopher, *C. J. Humphrey*, 2092 (in Mo. Bot. Gard. Herb., 21145); Lombard, *E. T. & S. A. Harper*, 952.
- Michigan: Ann Arbor, *C. H. Kauffman*, 27; New Richmond, *Demmon*, comm. by *A. H. W. Povah*, 6 (in Mo. Bot. Gard. Herb., 20198), and *C. H. Kauffman*, 29 (in Mo. Bot. Gard. Herb., 20304).
- Wisconsin: Madison, *M. C. Jensen*, and another comm. by *C. J. Humphrey*, 2439 (in Mo. Bot. Gard. Herb., 43839 and 22376, respectively); Stevens Point, *C. J. Humphrey*, 1802 (in Mo. Bot. Gard. Herb., 17910).
- Minnesota: *Univ. Minn. Myc. Herb.*, comm. by *E. L. Jensen*, 8 (in Mo. Bot. Gard. Herb., 10565).
- Missouri: Bismarck, *L. O. Overholts* (in Mo. Bot. Gard. Herb., 58322).
- British Columbia: Sidney, *J. Macoun*, 12 (in Mo. Bot. Gard. Herb., 5730).
- New Mexico: Cienega Springs, *W. H. Long*, 21596 (in Mo. Bot. Gard. Herb., 55120); Cloudcroft, *W. H. Long*, 19665, 19523 (in Mo. Bot. Gard. Herb., 55044, 55045); Tyom Canyon, *W. H. Long*, 21895 (in Mo. Bot. Gard. Herb., 55119); Tyom Exp. Sta., *W. H. Long*, 21877 (in Mo. Bot. Gard. Herb., 55118).

**33. *C. confluens*** Fries, *Epier.* 564. 1838; *Hym. Eur.* 655. 1874; Berkeley, *Outl. Brit. Fung.* 276. 1860; *Sacc. Syll. Fung.* 6: 626. 1888; Masee, *Linn. Soc. Bot. Jour.* 27: 133. 1890; Bresadola, *I. R. Accad. Agiati Atti III.* 3: 112. 1897; Bourdot & Galzin, *Soc. Myc. Fr. Bul.* 27: 252. 1911; Rea, *Brit. Basid.* 679. 1922.

*Thelephora confluens* Fries, *Syst. Myc.* 1: 447. 1821.—*Corticium confluens* var. *subcalceum* Karsten, *Rev. Myc.* 10: 74. 1888. Fructifications effused, rather thick, waxy-membranaceous,

small pieces separable when moistened, whitish to cartridge-buff and light pinkish cinnamon in the herbarium, even, with few cracks, the margin indeterminate, thinning out; in section 200–500  $\mu$  thick, not colored, composed of ascending, densely interwoven and agglutinate, thin-walled hyphae  $2\frac{1}{2}$ –3  $\mu$  in diameter, not incrustated, occasionally nodose-septate; no gloeocystidia; spores hyaline, even, ovoid,  $5\text{--}9 \times 3\frac{1}{2}\text{--}6 \mu$ , copious.

Fructifications 2–8 cm. long, 1–3 cm. wide.

On bark of fallen decaying limbs of *Betula*, *Alnus*, *Salix*, and other frondose species. In Europe, from Newfoundland to Louisiana and westward to Manitoba and Washington, in Mexico, the West Indies, Japan, and South Africa. April to December. Common.

*C. confluens* may be recognized among our species by its occurrence on frondose bark in closely adnate fructifications with somewhat the aspect of pale *Peniophora incarnata* but of different structure, which is distinctive by not being stratose and by having the hyphae agglutinate, and by the presence of large spores. The authentic specimen from Karsten of *C. confluens* var. *subcalceum* has spores  $9 \times 6 \mu$  and does not have cystidia, differing in both respects from the statement by Bresadola in Ann. Myc. 1: 102. 1903.

Specimens examined:

Sweden: L. Romell, 80, 81, 82, 83, 84.

Finland: Mustiala, authentic specimen, perhaps part of type of *Corticium confluens* var. *subcalceum* Karst. from Karsten.

Germany: Lengerich, W. Brinkmann, Westfälische Pilze, 13 (in Mo. Bot. Gard. Herb., 63430).

Austria: Tirol, Hall, V. Litschauer; Stubai, V. Litschauer.

Italy: G. Bresadola.

Newfoundland: Bay of Islands, A. C. Waghorne, 983 (in Mo. Bot. Gard. Herb., 63747).

Canada: Lower St. Lawrence Valley, J. Macoun, 65.

Ontario: Eastman's Springs, J. Macoun, 532; Ottawa, J. Macoun, 29; Woodstock, E. Bartholomew, 6713 (in Mo. Bot. Gard. Herb., 57041).

New Hampshire: Camp, Ellis R., Underwood & C., 22 (in N. Y. Bot. Gard. Herb., Burt Herb., and Mo. Bot. Gard. Herb., 61585); Chocorua, W. G. Farlow.

Vermont: Middlebury, *E. A. Burt*, 2 gatherings.

New England: *W. G. Farlow*.

Massachusetts: Waverly, *G. R. Lyman*, 164.

New York: Albany, *H. D. House* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 57446, 57472, 57670, 59680); Altamont, *E. A. Burt*; East Galway, *E. A. Burt*; Hudson Falls, *S. H. Burnham*, 48 (in Mo. Bot. Gard. Herb., 54465); Ithaca, *C. H. Kauffman*, *C. O. Smith*, *Van Hook*, comm. by *G. F. Atkinson*, 14384, 8045, and 8048, respectively; Karner, *H. D. House* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 54374, 55206); New York, *Class in Mycology* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61346); North Elba, *C. H. Peck*, comm. by N. Y. State Mus. Herb. (in Mo. Bot. Gard. Herb., 56111); Oneida, *H. D. House*, comm. by N. Y. State Mus. Herb. (in Mo. Bot. Gard. Herb., 59705); Seventh Lake, Hamilton County, *H. E. Stork*, 2 (in Mo. Bot. Gard. Herb., 56639); West Park, New York City, *F. S. Earle*, 1596 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61425); West Troy, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55781).

New Jersey: Belleplain, *C. L. Shear*, 1255.

Pennsylvania: Carbondale, *E. A. Burt*; Germantown, *E. A. Burt*; State College, *L. O. Overholts*, 2620 (in Mo. Bot. Gard. Herb., 20278).

Maryland: Silver Springs, *D. G. Fairchild*, comm. by U. S. Dept. Agr. Herb.

District of Columbia: Takoma Park, *C. L. Shear*, 1354; Washington, *C. L. Shear*, 1238, in part.

Florida: Daytona, *R. A. Harper*, 9 (in Mo. Bot. Gard. Herb., 54536).

Alabama: Auburn, *F. S. Earle* & *C. F. Baker*, and 43 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61558).

Louisiana: Baton Rouge, *Edgerton* & *Humphrey*, comm. by *C. J. Humphrey*, 5729, 5733; St. Martinville, *A. B. Langlois*, *i*, *dh*, and 472 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 614788), and 1761a, comm. by *W. G. Farlow* (in Mo. Bot. Gard. Herb., 42600).

Illinois: Duquoin, *C. J. Humphrey*, 1309, 1394 (in Mo. Bot. Gard. Herb., 10324, 10352); Riverside, *E. T. & S. A. Harper*, 675.

- Wisconsin: Blue Mounds, *Miss Stucki*, 12, 13.  
 Iowa: Ames, *H. H. Hume*, 3 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61583); Fort Dodge, *O. M. Oleson*, 438 (in Mo. Bot. Gard. Herb., 44077).  
 Manitoba: Winnipeg, *G. R. Bisby*, 62 (in Mo. Bot. Gard. Herb., 57898).  
 Washington: Puyallup, *C. J. Humphrey*, 7649.  
 Porto Rico: Campo Alegre, *J. A. Stevenson*, 6585 (in Mo. Bot. Gard. Herb., 55078).  
 Jamaica: Troy, *A. E. Wight*, 420, comm. by W. G. Farlow (in Mo. Bot. Gard. Herb., 14558).  
 Mexico: Guernavaca, *W. A. & E. L. Murrill*, 541, 543, 548, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54558, 54559, 54560).  
 Japan: Prov. Shinauo, *A. Yasuda*, 133 (in Mo. Bot. Gard. Herb., 62060).  
 Africa: Natal, Pietermaritzburg, *P. A. van der Bijl*, 583 (in Mo. Bot. Gard. Herb., 69371).

**34. *Coniophora corrugis* Burt, Mo. Bot. Gard. Ann. 13: 310. 1926.**

This species occurs on living trees, logs and dead limbs of conifers in forests of the Rocky Mountain region and from British Columbia to Arizona in the Pacific states. The fructifications are somewhat coriaceous, loosely attached to the substratum, and vinaceous in color. The spores in most specimens are colorless, even,  $6-10 \times 4-7 \mu$ , not copious—fully mature and colored in only one of the specimens received during 14 years.

**35. *C. laetum* (Karst.) Bresadola, Ann. Myc. 1: 94. 1903; v. Höhnelt & Litschauer, K. Akad. Wiss. Wien Sitzungsber. 115: 1552. 1906; Bourdot & Galzin, Soc. Myc. Fr. Bul. 27: 237. 1911.**

*Hyphoderma laetum* Karsten, Rev. Myc. 11: 206. 1889; Sacc. Syll. Fung. 10: 530. 1892.—*Corticium hypnophilum* Karsten, Rev. Myc. 12: 126. 1890; Sacc. Syll. Fung. 9: 234. 1891.

Fructifications effused, thin, membranaceous-waxy, soft, small pieces separable when moist, orange-pink to rose color, fading in the herbarium to cartridge-buff, even, not cracked, the margin

thinning out, somewhat arachnoid; in section 100–200  $\mu$  thick, not colored, composed of interwoven, hyaline hyphae 5–8  $\mu$  in diameter, not incrustated, no clamp connections found; no gloeocystidia; spores hyaline, even, 6–12  $\times$  4–8  $\mu$ .

Fructifications 5 mm.–2 cm. long, 5–10 mm. wide.

On living mosses and on bark of dead *Alnus* and *Betula*. In Europe and in New York, Michigan, and North Dakota.

This species may be recognized by bright rose color when fresh, occurrence on living moss and dead alders, large spores, coarse hyphae, and absence of gloeocystidia. The three American specimens cited below seem referable to *C. laetum* except that their hyphae are more numerous and of smaller diameter—4–6  $\mu$ —than those of the European specimens with which compared. *Peniophora aurantiaca* has much the same aspect and occurs on *Alnus* also but has gloeocystidia and cystidia.

Specimens examined:

Sweden: *L. Romell*, 145.

Finland: Mustiala, authentic specimen of *C. hypnophilum* from Karsten.

Italy: specimen on *Alnus* of *C. laetum* collected and determined by Bresadola.

New York: Karner, *H. D. House* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 44708).

Michigan: Isle Royale, *Allen & Stuntz*, 42, comm. by Univ. Wis. Herb.

North Dakota: *Brenckle*, comm. by V. Litschauer, 2.

36. *C. roseum* Persoon, Roemer Neues Mag. Bot. 1: 111. 1794; Fries, Epicr. 560. 1838; Hym. Eur. 650. 1874; Berkeley, Outl. Brit. Fung. 273. 1860; Sacc. Syll. Fung. 6: 611. 1888; Bourdot & Galzin, Soc. Myc. Fr. Bul. 27: 233. 1911; Coker, Elisha Mitchell Scientif. Soc. Jour. 36: 171. pl. 33, f. 3–5. 1921; Rea, Brit. Basid. 673. 1922.

*Thelephora rosea* Persoon, Syn. Fung. 575. 1801; Myc. Eur. 1: 131. 1822; Fries, Syst. Myc. 1: 451. 1821; Elench. Fung. 1: 203. 1828.—*Corticium roseolum* Masee, Linn. Soc. Bot. Jour. 27: 140. pl. 6, f. 2. 1890.—*C. polygonoides* Karsten, Soc. pro Fauna et Fl. Fenn. Meddel. 6: 12. 1881; Sacc. Syll. Fung. 6:

638. 1888; Bourdot & Galzin, Soc. Myc. Fr. Bul. 27: 232. 1911.—*Lyomyces polygonoides* Karsten, Finska Vet.-Soc. Bidrag Natur. och Folk 48: 419. 1889.—*Aleurodiscus roseus* (Pers.) v. Höhnelt & Litschauer, K. Akad. Wiss. Wien Sitzungsber. 115: 1568. 1906.

Fructification effused, rather thick, adnate, somewhat membranaceous, small pieces separable when moist, drying pinkish buff to buff-pink, pruinose, finally cracked, the margin whitish, more or less byssoid; in section 200–280  $\mu$  thick, with the hymenial layer perhaps slightly colored, 2-layered, with the basal layer composed of longitudinally arranged, densely interwoven hyphae 3–3½  $\mu$  in diameter, not incrusted, the hymenial layer composed of erect hyphae, basidia, and slender, slightly brownish, short-branched paraphyses; no gloeocystidia; basidia at first exceeded by the paraphyses, finally protruding; spores hyaline, even, 6–12  $\times$  4½–8  $\mu$ .

Fructifications sometimes 2–3 mm. in diameter and becoming laterally confluent, more usually 1–10 cm. long, 1–3 cm. wide.

On bark and wood of logs and branches of frondose species such as *Populus*, *Betula*, *Alnus*, *Acer*, *Carya*, *Ulmus*, etc., rarely on coniferous wood. In Europe, from Canada to Alabama, westward to Manitoba and Washington, in New Mexico and Mexico, and in Japan. Throughout the year. Common.

*C. roseum* is well named, for its pale rose-color is distinctive and is confirmed, when sections are examined, by the slender, slightly brownish, short-branched organs which are probably paraphyses but have seemed to me when in young vigorous condition to have the branches tipped by very minute spherical bodies. *C. polygonoides* is the early stage with the paraphyses exceeding the young basidia.

Specimens examined:

Exsiccati: Ell. & Ev., Fungi Col., 609, under the name *Corticium incarnatum*; de Thümen, Myc. Univ., 2012.

Sweden: L. Romell, 47, 127, 146; Stockholm, L. Romell, 147.

Finland: Mustiala, P. A. Karsten, in de Thümen, Myc. Univ., 2012, and authentic specimen of *Lyomyces polygonoides*.

Austria: Stubai, Tirol, V. Litschauer.

Italy: Trient, G. Bresadola.

England: Apthorpe, *Norths*, 12, type of *C. roseolum* (in Kew Herb.).

Canada: *J. Macoun*, 85.

Ontario: London, *J. Dearness*, D1078c (in Mo. Bot. Gard. Herb., 18666); Ottawa, *J. Macoun*, 135, 451.

Maine: Freeport, *O. O. Stover*, comm. by P. L. Ricker.

Vermont: Middlebury, *E. A. Burt*, 3 gatherings; Ripton, *E. A. Burt*, 2 gatherings; Smugglers' Notch, Mt. Mansfield, *E. A. Burt*.

Massachusetts: Newton, *W. G. Farlow*; Willow Brook, *H. Webster*, comm. by Boston Myc. Club Herb., E.; Waverly, *G. R. Lyman*, 120, 164.

New York: Alcove, *C. L. Shear*, 1204, 1313; Altamont, *E. A. Burt*; Ithaca, *G. F. Atkinson*, 2120, and *H. S. Jackson*, comm. by Cornell Univ. Herb., 14389; Minnewaska, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55980); Orient, *R. Latham*, 223 (in Mo. Bot. Gard. Herb., 44226); Poughkeepsie, *R. C. Poppey*, in Gerard Herb. (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61559); Syracuse, *L. M. Underwood*, 18 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 44312); White Plains, *L. M. Underwood* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61410).

New Jersey: Newfield, *J. B. Ellis*, in Ell. & Ev., Fungi Col., 609.

Pennsylvania: Center Hall, *E. West*, comm. by L. O. Overholts, 3659 (in Mo. Bot. Gard. Herb., 54700); State College, *J. Ellis*, comm. by L. O. Overholts, 5207 (in Mo. Bot. Gard. Herb., 56360).

District of Columbia: Takoma Park, *C. L. Shear*, 953.

North Carolina: *W. C. Coker*, 4703 (in Mo. Bot. Gard. Herb., 57424).

Alabama: Auburn, *C. F. Baker* (in N. Y. Bot. Gard. Herb., Mo. Bot. Gard. Herb., 61397, and Burt Herb.); Montgomery, *R. P. Burke*, 2, in part, 160, 305 (in Mo. Bot. Gard. Herb., 22073, 44961, 57195).

Ohio: College Hill, *Aiken*, comm. by Lloyd Herb., 2341; Linwood, *C. G. Lloyd*, 1870; Preston, *C. G. Lloyd*, 1561.

Indiana: Indianapolis, *H. von Schrenk* (in Mo. Bot. Gard. Herb., 19805).

Illinois: Cairo, *E. Bartholomew*, 9234.

Minnesota: Brickton, *C. J. Humphrey*, 1124 (in Mo. Bot. Gard. Herb., 10276).

Iowa: Decorah, *E. W. D. Holway*.

Missouri: Creve Coeur Lake, *F. P. McWhorter* (in Mo. Bot. Gard. Herb., 57334).

Montana: Monarch, *J. R. Weir* (in Mo. Bot. Gard. Herb., 20736).

Idaho: *J. R. Weir*, 366 (in Mo. Bot. Gard. Herb., 15165).

Manitoba: River Park, *A. H. R. Buller*, 873 (in Mo. Bot. Gard. Herb., 58994); Stony Mountain, *A. H. R. Buller*, 897 (in Mo. Bot. Gard. Herb., 58989); Winnipeg, *A. H. R. Buller*, 936 (in Mo. Bot. Gard. Herb., 59025).

Washington: Bingen, *W. N. Suksdorf*, 685, 720; Columbia River, W. Klickitat County, *W. N. Suksdorf*, 106.

New Mexico: Mogollon, *G. G. Hedgcock & W. H. Long*, comm. by *C. J. Humphrey*, 2540 (in Mo. Bot. Gard. Herb., 21660).

Mexico: Parral, Chihuahua, *E. O. Mathews*, 4 (in Mo. Bot. Gard. Herb., 44419).

Japan: Sendai, *A. Yasuda*, 60 (in Mo. Bot. Gard. Herb., 56144).

37. *C. salmonicolor* Berk. & Broome, Linn. Soc. Bot. Jour. 14: 71. 1873; Sacc. Syll. Fung. 6: 620. 1888; Masee, Linn. Soc. Bot. Jour. 27: 122. 1890; Petch, Phys. and Dis. of *Hevea brasiliensis*, 209. 1911; Rorer, Trinidad Dept. Agr. Bul. 15<sup>1</sup>: 1. f. 1, 2. 1917; Lee & Yates, Philippine Jour. Sci. 14: 657. pl. 1-7. 1919.

*Necator decretus* Masee, Kew Bul. Misc. Inf. 1898: 119. 1898; Sacc. Syll. Fung. 16: 1094. 1902.—*Corticium javanicum* Zimmermann, Centralbl. f. Bakt. Abt. 2, 7: 103. text f. 3. 1901.—*C. Zimmermanni* Sacc. & Syd. in Sacc. Syll. Fung. 16: 1117. 1902; 17: 169. 1905.

Type: in Kew Herb.

Fructifications broadly effused, thin, adnate, membranaceous-soft, separable when moist, pale ochraceous buff to orange-pink when fresh, fading in the herbarium to pale olive-buff and cartridge-buff, pulverulent, even, cracking a little in drying, the margin thinning out; in section 100–200  $\mu$  thick, composed of hyphae running longitudinally over the substratum and bearing

a broad layer of suberect, branching, loosely interwoven hyphae 4–7  $\mu$  in diameter, not incrustated, not nodose-septate; no gloeocystidia; basidiospores hyaline, even, 9–12  $\times$  6–8  $\mu$ . The conidia of the imperfect *Necator* stage are catenulate, 14–18  $\times$  7–8  $\mu$ , according to Masee.

Fructifications 2–20 cm. long, 1–3 cm. wide.

Parasitic on bark of branches 1–3 cm. in diameter and young trees of *Cacao*, *Citrus*, *Hevea*, *Amherstia*, tea and coffee plants in tropical regions, and on *Ficus* and pear and apple shoots in Florida and Louisiana. In West Indies, Philippine Islands, East Indies, and Ceylon.

*C. salmonicolor* is a species very destructive to important economic species of shrubs and trees, causing the Pink Disease where the climate is warm and moist for sufficiently long periods that the mycelium can run over the bark of young shoots and penetrate into the deeper tissues. Its parasitic occurrence on living woody plants, bright color, coarse hyphae, and large spores render it easy to recognize in tropical regions.

Specimens examined:

Florida: Gainesville, *J. Matz* (in Mo. Bot. Gard. Herb., 44822, 54934).

Louisiana: Baton Rouge, *C. W. Edgerton*, 702, 990a.

Porto Rico: Bayamon, *J. A. Stevenson*, 2827 (in Mo. Bot. Gard. Herb., 9689); Pueblo Vigo, *J. A. Stevenson*, 5436 (in Mo. Bot. Gard. Herb., 7820); Trujillo Alto, *J. A. Stevenson*, 3819, and *W. C. Drier*, comm. by *J. A. Stevenson*, 6770 (in Mo. Bot. Gard. Herb., 9059 and 55054, respectively).

Dominica: *W. Norwell*, comm. by *J. B. Rorer* (in Mo. Bot. Gard. Herb., 18560).

Trinidad: *J. B. Rorer* (in Mo. Bot. Gard. Herb., 20429); Guaico, *J. B. Rorer*, four gatherings (in Mo. Bot. Gard. Herb., 14023, 17934, 20295, 44770); Port of Spain, *J. B. Rorer* (in Mo. Bot. Gard. Herb., 9008).

Ceylon: a portion of 3 authentic specimens determined by Berkeley in Kew Herb. (in Mo. Bot. Gard. Herb., 8891), *T. Petch*, comm. by Kew Herb. (in Mo. Bot. Gard. Herb., 8890); Peradeniya, *T. Petch*, 8640 (in Mo. Bot. Gard. Herb., 56245).

**38. C. spretum** Burt, n. sp.

Type: in Burt Herb.

Fructifications effused, adnate, rather thick, somewhat coriaceous, cinnamon-buff in the herbarium, even, not shining, in drying cracking to the substratum into polygonal masses about 1 mm. in diameter, the margin similar, narrow, entire; in section 200–300  $\mu$  thick, colored like the hymenium, composed of ascending, densely interwoven, thin-walled hyphae 3–3½  $\mu$  in diameter, not incrusted, not nodose-septate; no gloeocystidia; slender paraphyses about 1  $\mu$  in diameter, with short branches near the tips, are present between the basidia; spores hyaline, even, 8–10  $\times$  5–6  $\mu$ .

Fructifications probably large, for received in fragments up to 5 cm. long, 2 cm. wide.

On decorticated wood of a decaying stump of *Fraxinus oregona*. Washington. September.

*C. spretum* has conspicuous fructifications resembling *Hymenochaete spreta* in aspect. The deeply cracked fructifications cinnamon-buff externally and throughout, large spores, slender paraphyses, and occurrence on ash stumps should enable the species to be recognized confidently.

Specimens examined:

Washington: Bingen, W. N. Suksdorf, 962, type.

**39. C. rubropallens** (Schw.) Masee, Linn. Soc. Bot. Jour. 27: 145. 1890.

*Thelephora rubropallens* Schweinitz, Am. Phil. Soc. Trans. N. S. 4: 168. 1832.—*Stereum rubropallens* (Schw.) Cooke, Grevillea 20: 35. 1891; Sacc. Syll. Fung. 11: 121. 1895.—Not *C. rubropallens* Bresadola, Ann. Myc. 1: 97. 1903, nor Bourdot & Galzin, Soc. Myc. Fr. Bul. 27: 258. 1911.

Type: in Schweinitz Herb. and probably in Farlow Herb. and Kew Herb.

"T. effusa, indeterminatim effigurata, ambitu marginibus latis-simis albis; versus centrum subroseo-incarnata, crebre sporidifera aut pulverulenta. Pelliculam efficit ex arcte intertextis filis. Ulnarem longitudinem explet.

"Longe lateque effusa in corticibus et lignis Bethlehem."

—Schweinitz.

In section 100–150  $\mu$  thick, not colored, with the hyphae sub-erect, branched, rather loosely interwoven, about  $2\frac{1}{2}$ –3  $\mu$  in diameter, not incrustated but bearing imbedded crystalline matter, with very slender, colorless, hair-like paraphyses protruding beyond the basidia and, in my opinion, with short branches near the tips; no gloeocystidia; spores noted by Masee as  $8-9 \times 3 \mu$ , and by Cooke as  $6-7 \times 3 \mu$ , none found in my preparations of the type.

I regret that a *Corticium* on *Fagus*, Ripton, Vermont, Nov. 4, 1896, which I misdetermined as *C. rubropallens*, relying too largely on general aspect and coloration in comparison with the type, and communicated to Bresadola, Romell, and Karsten under that name, should have led both Bresadola and Bourdot into error concerning *C. rubropallens*. The names of those specimens should be changed to *C. roseopallens* Burt, as described in the present work.

*C. rubropallens* belongs in the group of species with *C. rubrocanum*, *C. albido-carneum*, and *C. Atkinsonii*. Each species of this group lacks gloeocystidia and has the very slender and numerous paraphyses protruding beyond the basidia and masking the latter. The only recent gathering which I can now refer to *C. rubropallens* on the basis of agreement in internal structure is now white in herbarium condition and doubtful therefore. Its few spores are  $9-10 \times 4 \mu$ .

Specimens examined:

Pennsylvania: Bethlehem, *Schweinitz*, type (in Schweinitz Herb.).

Alabama: Montgomery, *R. P. Burke*, 118 (in Mo. Bot. Gard. Herb., 19557).

**40.** *C. rubrocanum* de Thümen, Myc. Univ., 409, with description. 1876; Torr. Bot. Club Bul. 6: 95. 1876; Sacc. Syll. Fung. 6: 632. 1888.

Type: type distribution in de Thümen, Myc. Univ., 409.

Fructifications broadly effused, thin, adnate, membranaceous, small pieces separable when moist, becoming tilleul-buff in the herbarium, hoary, glabrous, finally cracking at the center into polygonal masses 1–2 to a mm., the margin determinate or indeterminate and thinning out, of the same color; in section

100–150  $\mu$  thick, not colored or only very slightly in the sub-hymenium, with the hyphae longitudinally and densely interwoven next to the substratum, then becoming erect, bushy-branched in the hymenial layer, short-celled, of irregular outline, about  $3\text{--}3\frac{1}{2}$   $\mu$  in diameter, not incrustated but with some imbedded crystalline matter; paraphyses slightly brownish below, protruding beyond the basidia as very slender hairs about  $\frac{1}{2}\text{--}1$   $\mu$  in diameter with short lateral branches; no gloecystidia; the only spore found is hyaline, even,  $9 \times 3\frac{1}{2}$   $\mu$  but may not belong.

Fructifications 2–10 cm. long, 1–2 cm. wide.

On fallen twigs of *Quercus coccinea*. New Jersey to Louisiana. November to April. Not common.

*P. rubrocanum* is distinguished by its occurrence in thin, hoary, nearly white fructifications with a tint of pink on small fallen branches of oak, and by the absence of gloecystidia and the presence of delicate hair-like paraphyses in the hymenial surface. Spore collections should be made to determine the spore dimensions, for the spores have not been retained well in any specimen examined. It is probable that *C. rubrocanum* will be found to be a synonym of *C. rubropallens* when the type of the latter can be studied more critically than by me twenty-six years ago.

Specimens examined:

Exsiccati: Ellis, N. Am. Fungi, 22; de Thümen, Myc. Univ., 409, type.

New Jersey: Newfield, *J. B. Ellis*, in Ellis, N. Am. Fungi, 22, in de Thümen, Myc. Univ., 409, and (in Mo. Bot. Gard. Herb., 4846, 44638).

South Carolina: *H. W. Ravenel*, 377, comm. under the name *C. Auberianum* by N. Y. Bot. Gard. Herb.

Alabama: Montgomery, *R. P. Burke*, 105 (in Mo. Bot. Gard. Herb., 11280).

Louisiana: Natchitoches, *G. D. Harris*, comm. by Cornell Univ. Herb., 5111; St. Martinville, *A. B. Langlois*, 1933

41. *C. cultum* Burt, n. sp.

Type: in Burt Herb.

Fructifications usually a thin, whitish, cottony mycelium along the sides of tunnels of a bark beetle but sometimes bearing a

hymenium and in those places effused, small, thin, closely adnate, somewhat membranaceous-fleshy, ivory-yellow when growing, fading to white in the herbarium, even, not cracked, the margin continuous with the sterile mycelium; in section 100–150  $\mu$  thick, not colored, composed of suberect, branching, densely arranged and somewhat interwoven hyphae 3–3½  $\mu$  in diameter, short-celled, occasionally nodose-septate; no gloeocystidia; basidia simple, cylindric,  $27 \times 3\frac{1}{2}$ –4½  $\mu$ , with 4 knob-shaped sterigmata; spores hyaline, even,  $6$ – $8 \times 3\frac{1}{2}$ –4½  $\mu$ , copious; some imbedded spores present.

Fructifications 5–10 mm. long, 1–2 mm. wide.

In thick bark of coniferous logs on side walls of tunnels made by a bark-boring beetle. Idaho probably.

*C. cultum* is one of the species which should be considered in connection with the fungous flora of burrows of bark-boring insects. The term “ambrosia fungi” has been used for some other fungi growing in such places. The type specimen of *C. cultum* is scanty but well fruited. The species has not been received from any source as growing on the exterior of bark or wood.

Specimens examined:

Idaho: probably Idaho but only general locality stated, *J. R. Weir*, comm. by W. G. Farlow, type (in Mo. Bot. Gard. Herb., 44655).

#### 42. *C. rubellum* Burt, n. sp.

Type: in Burt Herb.

Fructifications broadly effused, adnate, thin, somewhat membranaceous, small pieces separable when moist, vinaceous-fawn, becoming wood-brown in the herbarium, even, not waxy, the margin thinning out; in section 120–500  $\mu$  thick, not colored when thin but somewhat colored in thick fructifications and then stratose, with the hyphae arranged longitudinally and crowded together parallel with the substratum in each stratum, more loosely interwoven towards the hymenium, 2½–3  $\mu$  in diameter, not incrusted, rarely nodose-septate; no gloeocystidia; spores copious, hyaline, even,  $6$ – $9 \times 5$ –6  $\mu$ , flattened on one side, with a small apiculus on the flattened side near the base.

Fructifications 5–10 cm. long, 1–5 cm. wide.

On decorticated wood of dead *Vitis* and on decaying bark of *Quercus Gambelii* and *Tilia*. Florida, Illinois, Colorado, and Manitoba. July to October.

*C. rubellum* differs from *C. rubicundum* in becoming finally stratose and somewhat colored, having larger and more subglobose spores, and occurring on dead grape vines, oak, and basswood. The Florida specimen lacks spores and may be incorrectly referred here. *C. confluens* has similar spores.

Specimens examined:

Florida: New Smyrna, *W. A. Murrill*, 27, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 62081).

Illinois: Glencoe, *E. T. & S. A. Harper*, 941, type; River Forest, *E. T. & S. A. Harper*, 661.

Colorado: Deer Creek Park, *E. Bartholomew*, 9149, 9150.

Manitoba: Winnipeg, *A. H. R. Buller*, comm. by G. R. Bisby, 724 (in Mo. Bot. Gard. Herb., 58987).

43. *C. hydnans* (Schw.) Burt, n. comb.

*Radulum hydnans* Schweinitz, Am. Phil. Soc. Trans. N. S. 4: 164. 1832; Sacc. Syll. Fung. 11: 112. 1895.—*Corticium colliculosum* Berk. & Curtis, Grevillea 2: 3. 1873; Peck, N. Y. State Mus. Rept. 28: 52. 1876; Sacc. Syll. Fung. 6: 618. 1888; Masee, Linn. Soc. Bot. Jour. 27: 134. 1890.

Type: in Farlow Herb. and probably in Schweinitz Herb.

Fructifications long and widely effused, adnate, thin, membranaceous, small pieces separable when moistened, pinkish buff to cinnamon-buff in the herbarium, becoming more or less colliculose or somewhat tuberculate, cracking into polygonal masses 1–2 mm. in diameter, the margin whitish, with hyphae interwoven; in structure 100–300  $\mu$  thick, not colored, with the hyphae longitudinally arranged next the substratum and then ascending and interwoven to the hymenium, 2–3  $\mu$  in diameter, not incrustated; no gloeocystidia; spores hyaline, even,  $5-8 \times 2\frac{1}{2}-3\frac{1}{2} \mu$ .

Fructifications 1–10 cm. long, 1–3 cm. wide.

On decaying frondose limbs on the ground. Canada to Texas and westward to Washington and British Columbia. April to November. Occasional.

*C. hydnans* is intermediate between *Corticium* and *Radulum* with granules rather too broad at base, too little elevated and too convex to be a typical *Radulum* in configuration, and yet always leading one to search for more raduloid teeth. It is well named as *C. hydnans* or by its later name *C. colliculosum*. It may be distinguished from *Radulum orbiculare* in doubtful cases by its lack of gloeocystidia.

Specimens examined:

Exsiccati: Ellis, N. Am. Fungi, 329 and 717 b, the latter under the name *Corticium subgiganteum*; Ravenel, Fungi Am., 126, 227, both under the name *Corticium calceum*; de Thümen, Myc. Univ., 605.

Canada: Gaspé, J. Macoun, 530.

Ontario: London, J. Dearness, 1178 (in Mo. Bot. Gard. Herb., 18773).

New Hampshire: North Conway, A. S. Rhoads, 7 (in Mo. Bot. Gard. Herb., 56893).

Vermont: Middlebury, E. A. Burt.

Massachusetts: Sprague, 96, type of *Corticium colliculosum* (in Curtis Herb., 5297).

New York: Albany, H. D. House (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 14834); Alcove, C. L. Shear, 1011, 1212, 1219; East Galway, E. A. Burt; Grand View, H. von Schrenk (in Mo. Bot. Gard. Herb., 42817); Ithaca, H. S. Jackson, comm. by Cornell Univ. Herb., 14390, and W. H. Long (in Mo. Bot. Gard. Herb., 62987); New Baltimore, C. H. Peck, comm. by N. Y. State Mus. Herb., T 30 (in Mo. Bot. Gard. Herb., 56071); Trenton Falls, C. H. Peck, comm. by N. Y. State Mus. Herb., T 9 (in Mo. Bot. Gard. Herb., 54572).

New Jersey: Newfield, J. B. Ellis, and (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61636) and in Ellis, N. Am. Fungi, 717 b, and de Thümen, Myc. Univ., 605.

Pennsylvania: Bethlehem, Schweinitz, type of *Radulum hydnans* (in Schweinitz Herb. and Farlow Herb.); Center County, C. R. Orton, comm. by L. O. Overholts, 2940 (in Mo. Bot. Gard. Herb., 8265); State College, L. O. Overholts, 3040 (in Mo. Bot. Gard. Herb., 5689); Trexlertown, W. Herbst, 3.

Maryland: Rock Creek, C. L. Shear, 1046.

- District of Columbia: Washington, *C. L. Shear*, 1261.  
 North Carolina: Biltmore Estate, *W. A. Murrill* (in *N. Y. Bot. Gard. Herb.*, and *Mo. Bot. Gard. Herb.*, 61382).  
 Georgia: Darien, *H. W. Ravenel*, in *Ravenel*, *Fungi Am.* 227.  
 Florida: Gainesville, *H. W. Ravenel*, in *Ravenel*, *Fungi Am.*, 126.  
 Louisiana: Baton Rouge, *Edgerton & Humphrey*, comm. by *C. J. Humphrey*, 5642; St. Martinville, *A. B. Langlois*, comm. by *U. S. Dept. Agr. Herb.*  
 Texas: *Lindheimer*, 40 (in *Mo. Bot. Gard. Herb.*, 4819).  
 West Virginia: Paw Paw, *C. L. Shear*, 1175.  
 Kentucky: Crittenden, *C. G. Lloyd*, 2365, 3118.  
 Ohio: Cincinnati, comm. by *Lloyd Herb.*, 2792; Loveland, *D. L. James*, comm. by *U. S. Dept. Agr. Herb.*  
 Illinois: Glen Ellyn, *E. T. & S. A. Harper*, 955; River Forest, *E. T. & S. A. Harper*, 734.  
 Michigan: Ann Arbor, *C. H. Kauffman*, 48 (in *Mo. Bot. Gard. Herb.*, 8083); Gogebic County, *E. A. Bessey*, 248 (in *Mo. Bot. Gard. Herb.*, 56613).  
 Missouri: Grandin, *H. von Schrenk* (in *Mo. Bot. Gard. Herb.*, 43021).  
 Nebraska: Long Pine, *C. L. Shear*, 1065.  
 British Columbia: Yoho Valley, *J. Macoun*, 6.  
 Washington: Bellingham, *J. R. Weir*, 545 (in *Mo. Bot. Gard. Herb.*, 5899).  
 California: Santa Catalina Island, *L. W. Nuttall*, 402, in part (in *Mo. Bot. Gard. Herb.*, 57614).

44. *C. rubicundum* Burt, n. sp.

Type: in Burt Herb.

Fructifications broadly effused, rather thick, membranaceous, loosely attached, separable, drying buff-pink to light vinaceous-cinnamon, slightly tubercular, pruinose, the margin radiating, whitish; in section 200–500  $\mu$  thick, not colored, with a hymenial layer 60  $\mu$  thick borne on a broad layer reaching to the substratum and composed of interwoven, thick-walled, hyaline hyphae 3–4  $\mu$  in diameter, not incrustated, occasionally nodose-septate; no gloeocystidia; basidia 4-spored; spores hyaline, even,  $4-7 \times 3-4\frac{1}{2}$   $\mu$ , copious.

Fructifications 6–8 cm. long, 2–5 cm. wide.

On bark of logs of *Tsuga canadensis*, *Picea* and *Pinus*. Canada, Colorado and Washington. September.

*C. rubicundum* has large, sheet-like, loosely attached fructifications with somewhat the aspect of those of *Peniophora velutina* but lacking cystidia. The thick, membranaceous, loosely attached fructification is suggestive of a resupinate *Stereum* but I have seen no *Stereum* of which this may be the resupinate stage. The occurrence on hemlock bark should help in identifying future gatherings.

Specimens examined:

Canada: Lake Rosseau, Ontario, *E. T. & S. A. Harper*, 637, type.  
Colorado: near Mancos, *G. G. Hedgcock*, comm. by C. J. Humphrey, 2560.

Washington: Mt. Paddo, *W. N. Suksdorf*, 735, 736.

45. *C. granulatum* Burt, n. sp.

Type: in Burt Herb.

Fructifications effused, thin, closely adnate, central portions fawn-color, becoming wood-brown in the herbarium, dull rather than shining, with some scattered, small granules, not cracked, the margin fimbriate, fading from ochroleucous to whitish; in section 120–240  $\mu$  thick, not colored, with a narrow incrustated zone, the hyphae densely interwoven, 3  $\mu$  in diameter, somewhat incrustated, not nodose-septate; no gloeocystidia; basidia protruding slightly when mature, with 4 sterigmata; spores hyaline, even,  $4-5 \times 2-3 \mu$ .

Fructifications 3–5 cm. long, 1–2 cm. wide.

On very rotten wood of *Populus trichocarpa*. Idaho. September and October.

This species should be readily recognized by its color when fresh, somewhat granular hymenium, and occurrence on decaying poplar wood. The incrustation of the hyphae is a good available character for separation from *C. subceraceum* and *C. deflectens*.

Specimens examined:

Idaho: Priest River, *J. R. Weir*, 33, type, and 106.

46. *C. illaqueatum* Bourdot & Galzin, Soc. Myc. Fr. Bul. 27: 238. 1911.

Type: authentic specimens in Burt Herb.

Fructifications effused, adnate, membranaceous-thin, loosely attached to the substratum, small pieces separable when moist, becoming cream-buff in the herbarium, even, not cracked regularly, the margin somewhat arachnoid; in section 150–300  $\mu$  thick, not colored, composed of loosely interwoven, thin-walled hyphae 3–4  $\mu$  in diameter, nodose-septate, with some incrustation next to the substratum; no gloeocystidia; spores hyaline, even,  $4\frac{1}{2}$ –6  $\times$  3  $\mu$ , borne 4 to a basidium.

Fructifications 1–3 cm. long,  $\frac{1}{2}$ –1 $\frac{1}{2}$  cm. wide.

On bark of decaying *Castanea* and other frondose species. France and Louisiana. September to January.

*C. illaqueatum* has color somewhat like that of *C. ceraceum* and *C. hydnans* but is loosely attached to the substratum and has smaller spores than the former and does not crack in drying like the latter.

Specimens examined:

France: Aveyron, *H. Bourdot*, 16063, and *M. Galzin*, 12684, 12689, 15107, comm. by *H. Bourdot*, 18548, 16092, 12623.

Louisiana: St. Martinville, *A. B. Langlois*, 203.

#### 47. *C. Rosae* Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructifications effused, adnate, rather thick, membranaceous, separable, drying Rood's brown, ceraceous, even, contracting in drying and cracking through the hymenial layer into rectangular masses 2–4 mm. in diameter and showing the thick, white, cottony subiculum in the crevices, the margin white, cottony; in section 400–600  $\mu$  thick, not colored, with the hyphae about 3  $\mu$  in diameter, more or less incrustated in the middle region, not nodose-septate, densely crowded together and arranged longitudinally in a broad layer along the substratum, then ascending obliquely and becoming densely interwoven in a thick hymenial layer; no gloeocystidia; spores hyaline, even,  $4$ – $7 \times 2\frac{1}{2}$ –3  $\mu$  as seen attached to the basidia.

Fructifications received in fragments 2–2 $\frac{1}{2}$  cm. long, 1 cm. wide—broken off on three sides.

On bark of dead wild rose—*Rosa* sp. British Columbia. February.

*C. Rosae* has thick fructifications which are conspicuous by their reddish brown color and prominent white margin. The occurrence on wild rose bushes should aid in recognition of the species. The loose attachment to the substratum by a broad layer of longitudinally arranged hyphae is suggestive of the genus *Stereum* but the specimens do not have the margin reflexed in the least degree; I know of no *Stereum* of which this may be the resupinate stage.

Specimens examined:

British Columbia: Sidney, *J. Macoun*, 275, type (in Mo. Bot. Gard. Herb., 63772) and another specimen of the same number comm. by J. Dearness (in Mo. Bot. Gard. Herb., 63773).

48. *C. apiculatum* Bresadola, *Mycologia* 17: 68. 1925.

*C. areolatum* Bresadola, *Mycologia* 17: 68. 1925.

Type: in Weir Herb.

Fructifications broadly effused, thin, membranaceous, tender, small portions separable when moistened, between ivory-yellow and cream color, even, contracting in drying and cracking into angular masses about 1 mm. in diameter more or less completely separated by fissures which show the floccose subiculum along their sides, the margin thinning out, fibrillose; in section 90–130  $\mu$  thick, not colored, composed of loosely interwoven, thin-walled hyphae  $2\frac{1}{2}$ – $4\frac{1}{2}$   $\mu$  in diameter, with an occasional incrusting granule, occasionally nodose-septate; no gloeocystidia; spores hyaline, even,  $4\frac{1}{2}$ –5  $\times$   $2\frac{1}{2}$ –3  $\mu$ .

Fructifications 2–5 cm. long,  $1\frac{1}{2}$ –3 cm. wide.

On decaying branches of *Alnus tenuifolia*. Alabama to Idaho, and British Columbia to Mexico. October and December.

*C. apiculatum* belongs in the *C. lacteum* group of species. It should be recognized in its region by occurrence on *Alnus*, cream color, and small, somewhat elliptical spores. *C. areolatum* has a fructification with the areolate masses separated from one another by rather wide fissures but of same color as type of *C. apiculatum*, spores the same size, and fructification separable to the same degree—certainly not closely adnate.

Specimens examined:

Alabama: Montgomery, *R. P. Burke*, 199, 202, 671 (in Mo. Bot. Gard. Herb., 57075, 57078, 63102).

Missouri: near St. Louis, *L. O. Overholts*, 3167 (in Mo. Bot. Gard. Herb., 5711).

Idaho: Priest River, *J. R. Weir*, 23304, type (in Weir Herb.), and 23387, type of *C. areolatum* (in Weir Herb.).

British Columbia: Sidney, *J. Macoun*, 33 (in Mo. Bot. Gard. Herb., 6767).

Washington: Seattle, *W. A. Murrill*, 131, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 55742).

Mexico: Jalapa, *W. A. & E. L. Murrill*, 123, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 10748).

**49. *C. subceraceum* Burt, n. sp.**

Type: in Burt Herb.

Fructifications broadly effused, adnate, membranaceous, separable when moist, tawny to hazel in the herbarium, even or with some small obtuse granules, waxy, not cracking, the margin somewhat fimbriate, whitish; in section 200–300  $\mu$  thick, not colored, 2-layered, the layer next to the substratum thick, composed of loosely arranged, suberect hyaline hyphae not incrustated, not nodose-septate, mostly 4–4½  $\mu$  in diameter but with a few up to 6  $\mu$ , the hymenial layer dense, thin, undulating; no gloeocystidia; spores hyaline, even, 4–4½  $\times$  2–2½  $\mu$ .

Fructifications 3–8 cm. long, 1–3 cm. wide.

On wood and bark of fallen frondose limbs, rarely on pine. July to October. Pennsylvania to Alabama and westward to Illinois. Infrequent.

*C. subceraceum* resembles in general aspect *C. ceraceum* but has small spores. This species should be compared with *Grandinia mucida* when the problem of the latter is being solved; the only European specimen of *G. mucida* which I have studied was shared with me by Bresadola and is distinct, having aspect of the illustration in Fries, *Icones Hym.*, pl. 195, f. 3.

Specimens examined:

Pennsylvania: Trexlertown, *W. Herbst*, 76, type, and an unnumbered specimen, both received under the name *Corticium laeve* of Herbst, *Fung. Fl. Lehigh Valley*.

Maryland: Takoma Park, *C. L. Shear*, 1275.

District of Columbia: *W. A. Murrill*, 1446 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61491).

North Carolina: Salem, *Schweinitz*, the *Thelephora aurantia* of Schweinitz, *Fungi Car.* and *Thelephora (Grandinia) mucida* of Schweinitz, *Syn. N. Am. Fungi*, 708 (in Schweinitz Herb.).

Alabama: Montgomery, *R. P. Burke*, 191 (in *Mo. Bot. Gard. Herb.*, 57070).

Kentucky: Crittenden, *C. G. Lloyd*, 1684, 3123.

Ohio: *C. G. Lloyd*, 4177, 4179; Cincinnati, *C. G. Lloyd*, 4496; Madisonville, *C. G. Lloyd*, 0171.

Illinois: Cerro Gordo, *L. O. Overholts*, 3121 (in *Mo. Bot. Gard. Herb.*, 5715); River Forest, *E. T. & S. A. Harper*, 658.

*Corticium incrustans* Höhn. & Litsch.

50. *C. roseo-pallens* Burt in Lyman, *Boston Soc. Nat. Hist. Proc.* 33: 173. pl. 20, f. 56-73. 1907.

Type: in Burt Herb.

Fructifications broadly effused, thin, adnate, membranaceous, tender, small pieces separable when moist, flesh-pink when fresh, fading to ivory-yellow in the herbarium, at first with the hymenium interrupted, at length continuous, waxy, even, the margin thinning out, with the hyphae interwoven; in section 100-200  $\mu$  thick, not colored, with the hyphae suberect, interwoven, more loosely arranged near the substratum, 3-3½  $\mu$  in diameter, not incrustated, occasionally nodose-septate; no gloeocystidia; basidia 4-spored; spores pale rose when first collected, fading to white, even, cylindric, slightly curved, 4-5  $\times$  1½-2  $\mu$ .

Fructifications 3-12 cm. long, 2-6 cm. wide.

On bark and wood of decaying logs of *Fagus*, *Populus*, *Quercus*, etc. Maine to Louisiana and in Missouri. October. Occasional.

This species may be recognized by its broadly effused, thin, flesh-pink or pale rosy salmon fructifications, fading upon drying to nearly white and by the small allantoid spores. In his discussion of a portion from my type, comm. to Bresadola under the name *C. rubropallens*, Bourdot & Galzin, *Soc. Myc. Fr. Bul.* 27: 258. 1911, regard their *C. subtestaceum* as a synonym and *C. incrustans* v. Höhn. & Litsch. as scarcely distinct. I have not seen specimens of the latter species and those of the former, communicated to me by Bourdot, are hardly convincing.

Specimens examined:

Maine: Kittery Point, *R. Thaxter*, comm. by W. G. Farlow, 7 (in Mo. Bot. Gard. Herb., 55291).

Vermont: Grand View Mountain, *E. A. Burt*; Middlebury, *E. A. Burt*; Ripton, *E. A. Burt*, type; Weybridge, *E. A. Burt*.

Massachusetts: Stony Brook, *G. R. Lyman*, 142; Waverly, *G. R. Lyman*, 142.

New York: Albany, *H. D. House*, 14.170 and *H. D. House & J. Rubinger* (in Mo. Bot. Gard. Herb., 44721, 8732); Ithaca, *G. F. Atkinson*, 2559a; Sylvan Beach, *H. D. House* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 9089).

Louisiana: Lafayette, *A. B. Langlois*, 1764, comm. by W. G. Farlow.

Missouri: Creve Coeur, *B. M. Duggar* (in Mo. Bot. Gard. Herb., 44821).

51. *C. ochraceum* Fries, Epicr. 563. 1838; Hym. Eur. 652. 1874; Berkeley, Outl. Brit. Fung. 275. 1860; Sacc. Syll. Fung. 6: 624. 1888; Bresadola, Fungi Trid. 2: 60. pl. 170, f. 1. 1898; Bourdot & Galzin, Soc. Myc. Fr. Bul. 27: 256. 1911; Rea, Brit. Basid. 680. 1922.

*Thelephora calcea* var. *argillacea* Fries, Elench. Fung. 1: 215. 1828.

Type: in Fries Herb.

Fructifications broadly effused, closely adnate, rather thick, becoming pinkish buff to wood-brown in the herbarium, waxy, even or somewhat papillose, contracting in drying and cracking to the substratum into rectangular masses about  $\frac{1}{2}$ –1 mm. in diameter, and showing sides of the fissures composed of firm, dense, agglutinate structure, the margin at first whitish, soon concolorous, thinning out; in section 300–500  $\mu$  thick, becoming somewhat zonate or stratose, not colored, composed of erect hyphae densely crowded, interwoven, and so closely glued together that the deeply staining lumen is the distinguishable part; gloeocystidia, if present at all, so similar to the hyphae in form and diameter that there is no indication of them except in aqueous mounts; spores hyaline, even,  $4\text{--}6 \times 2\frac{1}{2}\text{--}3\frac{1}{2} \mu$ .

Fructifications 3–10 cm. long, 1–4 cm. wide.

On decorticated and sometimes charred limbs on the ground of

*Pinus Strobus* and other conifers. In Europe and in Vermont, Alabama, Idaho, and Washington. September and October. Rare in North America.

*C. ochraceum* somewhat resembles in general aspect *C. lactescens* and is, in my opinion, related to the latter by hyphae in barely the beginning of differentiation into gloeocystidia. *C. ochraceum* of American plant lists is based on misdetermined specimens.

Specimens examined:

Sweden: Femsjö, *E. Fries*, type (in Fries Herb.); North Sweden, *L. Romell*, 403; Smöland, *E. Fries*, authentic specimen of *Corticium calceum* var. *argillaceum* (in Fries Herb.).

Austria: Innsbruck, Tirol, *V. Litschauer*.

Italy: on *Abies excelsa* in Alps Mts., *G. Bresadola*.

Vermont: Middlebury, *E. A. Burt*.

Alabama: Montgomery, *R. P. Burke*, 606 (in Mo. Bot. Gard. Herb., 57471).

Montana: Rexford, *E. E. Hubert*, comm. by *J. R. Weir*, 12017 (in Mo. Bot. Gard. Herb., 63373).

Idaho: Priest River, *J. R. Weir*, 59.

Washington: Hoquiam, *C. J. Humphrey*, 6373; Seattle, *C. J. Humphrey*, 6454, and *W. A. Murrill*, 135, comm. by *N. Y. Bot. Gard. Herb.* (in Mo. Bot. Gard. Herb., 55737).

**52. *C. furfuraceum* Bresadola, Mycologia 17: 69. 1925.**

Type: in Weir Herb.

Fructifications broadly effused, closely adnate, thin, furfuraceous, ivory-yellow to pinkish buff in the herbarium, becoming somewhat cracked, the margin thinning out, pruinose; in section 60–140  $\mu$  thick, not colored, composed of suberect, thin-walled hyphae about 3  $\mu$  in diameter, somewhat collapsed and irregular in outline, indistinct, not incrusted; no gloeocystidia nor conducting organs; spores hyaline, even,  $4-5\frac{1}{2} \times 2\frac{1}{2} \mu$ .

Fructifications more than 10 cm. long, for broken off at both ends, 6 cm. wide.

On decaying wood of logs of *Abies grandis*, *Pinus monticola*, *P. contorta*, *P. ponderosa*, and *Larix occidentalis*. Montana, Idaho, Washington, and British Columbia. August and September. Probably common.

*C. furfuraceum* may be recognized on the substrata given by the very thin, closely adnate fructifications of ivory-yellow to pinkish buff color, which crack slightly by contraction in drying and have small spores.

Specimens examined:

Montana: Evaro, *J. R. Weir*, 439 (in Mo. Bot. Gard. Herb., 63714); Missoula, *J. R. Weir*, 401, 409 (in Mo. Bot. Gard. Herb., 11316, 63717).

Idaho: Coolin, *J. R. Weir*, 17211, type, 16764 and 16927 (in Weir Herb.).

British Columbia: Kootenai Mountains, near Salmo, *J. R. Weir*, 481, 501, 526 (in Mo. Bot. Gard. Herb., 63725, 63716, 63715).

Washington: Kalama, *C. J. Humphrey*, 6225.

53. *C. lividum* Persoon, Obs. Myc. 1: 38. 1796; Fries, Epicr. 563. 1838; Hym. Eur. 652. 1874; Berkeley, Outl. Brit. Fung. 275. 1860; Sacc. Syll. Fung. 6: 623. 1888; Massee, Linn. Soc. Bot. Jour. 27: 152. 1890; Bourdot & Galzin, Soc. Myc. Fr. Bul. 27: 253. 1911; Rea, Brit. Basid. 680. 1922.

*Thelephora livida* Persoon, Myc. Eur. 1: 148. 1822; Fries, Syst. Myc. 1: 447. 1821; Elench. Fung. 1: 218. 1828.—*Phlebia livida* (Pers.) Bresadola, I. R. Accad. Agiati Atti III. 3: 105. 1897.—*Grandinia ocellata* Fries, Epicr. 527. 1838; Hym. Eur. 626. 1874; Sacc. Syll. Fung. 6: 501. 1888.—An *Corticium hepaticum* Berk. & Curtis, Grevillea 1: 180. 1873?

Fructifications broadly effused, agglutinated, sometimes becoming rather thick, somewhat waxy-gelatinous, not separable, varied in color, gray or tinged reddish or bluish, becoming pale smoke gray, cinnamon-buff, and raisin-black in the herbarium, pruinose, even or sometimes radiately wrinkled or tuberculate by aggregations of imbedded crystalline matter, the margin thinning out, similar or whitish; in section 100–500  $\mu$  thick, not colored usually, rarely slightly brownish, composed of densely interwoven, suberect hyphae about 2–3  $\mu$  in diameter, with the walls gelatinously modified and glued together; no gloeocystidia; spores hyaline, even, 3–5  $\times$  1½–2  $\mu$ .

Fructifications 2–10 cm. long, 1–5 cm. wide.

On rotting logs, usually decorticated, of coniferous species,

more rarely on frondose logs. In Europe, Canada to Texas, and westward to British Columbia and California, and in Venezuela and East Indies. June to December. Probably common.

*C. lividum* may be recognized by its livid fructifications of gray, reddish, or bluish tinge and of somewhat gelatinous consistency, somewhat suggestive of those of *Peniophora gigantea* in aspect but destitute of cystidia. *C. hepaticum* seems to me referable to *C. lividum* but I need to study the type again in the feature of the slightly reflexed margin, which I now suspect may be that of a different species overrun by *C. lividum*. Since the tubercles of the *Grandinia ocellata* form are due to heaps of imbedded crystals, it has seemed to taxonomists that this species is a *Corticium* rather than a *Grandinia*.

Specimens examined: *See Y. Amer. Fung. 1709, 1711*

Sweden: Femsjö, *L. Romell*, 214, *E. A. Burt*, 3 gatherings, *L. Romell*, comm. by Bresadola.

Austria: Steiermark, *N. Rechinger*, comm. & det. by *V. Litschauer*; Tirol, *V. Litschauer*.

Hungary: *Kmet*, comm. by Bresadola.

Italy: *G. Bresadola*.

England: Mulgrave Woods, *E. M. Wakefield* (in Mo. Bot. Gard. Herb., 57115).

Canada: *J. Macoun*, 94, and 350, comm. by *W. G. Farlow* (in Mo. Bot. Gard. Herb., 8269); *J. Dearness* (in Mo. Bot. Gard. Herb., 56797); Ottawa, *J. Macoun*, 2, 46, 53.

New Hampshire: Chocorua, *W. G. Farlow*.

Vermont: Middlebury, *E. A. Burt*.

New York: Ampersand, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 56102); Catskill Mts., *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55792).

Pennsylvania: State College, *L. O. Overholts*, 3425 (in Mo. Bot. Gard. Herb., 54471).

Maryland: Takoma Park, *C. L. Shear*, 1269.

Louisiana: St. Martinville, *A. B. Langlois*, comm. by *W. G. Farlow* (in Mo. Bot. Gard. Herb., 44693), and comm. by *Ellis* Herb. (in Burt Herb.).

Texas: Silsbee, *W. H. Long*, 21227 (in Mo. Bot. Gard. Herb., 55127).

Wisconsin: Lake Geneva, *E. T. & S. A. Harper*, 839.

Montana: Anaconda, *E. E. Hubert*, comm. by J. R. Weir, 12007 (in Mo. Bot. Gard. Herb., 63367); Como, *E. E. Hubert*, comm. by J. R. Weir, 11958 (in Mo. Bot. Gard. Herb., 63315); Evaro, *J. R. Weir*, 421 (in Mo. Bot. Gard. Herb., 14764); Kalispell, *E. E. Hubert*, comm. by J. R. Weir, 11972 (in Mo. Bot. Gard. Herb., 63333); Libby, *E. E. Hubert*, comm. by J. R. Weir, 11347, 11360, 12041 (in Mo. Bot. Gard. Herb., 63701, 63702, 63391); Missoula, *E. E. Hubert*, comm. by J. R. Weir, 11981 (in Mo. Bot. Gard. Herb., 63334); Radnor, *E. E. Hubert*, comm. by J. R. Weir, 11645 (in Mo. Bot. Gard. Herb., 63707).

Idaho: Coeur d'Alene, *E. E. Hubert*, comm. by J. R. Weir, 11993 (in Mo. Bot. Gard. Herb., 63356); Priest River, *J. R. Weir*, 6364 (in Mo. Bot. Gard. Herb., 58373), and 13, 76, 84; Santa, *E. E. Hubert*, comm. by J. R. Weir, 11755, 12003, 12042 (in Mo. Bot. Gard. Herb., 63313, 63365, 63392).

British Columbia: Kootenai Mts. near Salmo, *J. R. Weir*, 527 (in Mo. Bot. Gard. Herb., 20903); Sidney, *J. Macoun*, 85, 380 (in Mo. Bot. Gard. Herb., 63693, 63764); Vancouver Island, *J. Macoun*, comm. by J. Dearness, V 85 (in Mo. Bot. Gard. Herb., 22729).

Washington: Kalama, *C. J. Humphrey*, 6138.

Oregon: Philomath, *S. M. Zeller*, 2159 (in Mo. Bot. Gard. Herb., 58774).

California: Requa, *R. Kelly*, comm. by A. S. Rhoads, 16 (in Mo. Bot. Gard. Herb., 56985).

Venezuela: La Guayra, *A. F. Blakeslee*, comm. by W. G. Farlow (in Mo. Bot. Gard. Herb., 55294).

East Indies: Batavia, *Rick*, comm. by Bresadola under the name *Phlebia livida* (Pers.) Bres.

#### 54. *C. Overholtsii* Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructifications effused, closely adnate, thin, somewhat membranaceous, at first between pale salmon and pale grayish vinaceous, becoming tilleul-buff in the herbarium, even, pruinose, not cracked, the margin thinning out, somewhat fimbriate; in section 160  $\mu$  thick, not colored, composed of suberect, densely inter-

woven, conglutinate hyphae up to  $3\ \mu$  in diameter, not incrustated, with wall gelatinously modified, the outline not well defined; no gloeocystidia; spores hyaline, even,  $5-6 \times 2-2\frac{1}{2}\ \mu$ , copious.

Fructifications  $1\frac{1}{2}$ –3 cm. long, 1–2 cm. wide.

On thick bark of dead *Pinus rigida*. Pennsylvania. October.

*C. Overholtsii* has the livid color of *C. vinaceo-scabens* but nothing else in common with that species. In structural details it is related to *C. lividum* but does not have the appearance of dried cartilage or resin, characteristic of all specimens of the latter known to me.

Specimens examined:

Pennsylvania: Reitz Gap, L. O. Overholts, 4656, type (in Mo. Bot. Gard. Herb., 57155).

**55. *C. Pseudotsugae* Burt, n. sp.**

Type: in Mo. Bot. Gard. Herb.

Fructifications effused, closely adnate, very thin, not at all separable, light buff in the herbarium, even, not shining, not cracked, the margin similar, thinning out, pulverulent; in section  $45-55\ \mu$  thick, not appreciably colored, composed of densely interwoven hyphae about  $1\frac{1}{2}$ – $2\ \mu$  in diameter, not incrustated, conglutinate; no gloeocystidia; basidia with 4 sterigmata; spores hyaline, even,  $3-5 \times 2-3\ \mu$ .

Fructifications 5–8 cm. long, 1–2 cm. wide.

On decorticated, decaying wood of *Pseudotsuga taxifolia* and *Tsuga canadensis*. New York and Idaho. August to November.

*C. Pseudotsuga* is almost exactly the avellaneous color of Saccardo's 'Chromotaxia.' This color, occurrence on hemlock, and very thin fructifications are the most available characters for recognition of the species.

Specimens examined:

New York: Freeville, G. F. Atkinson, 2627.

Idaho: Sandpoint, E. E. Hubert, comm. by J. R. Weir, 11617, type (in Mo. Bot. Gard. Herb., 63305).

**56. *C. confine* Bourdot & Galzin, Soc. Myc. Fr. Bul. 27: 260. 1911.**

Type: authentic specimen in Burt Herb.

Fructifications broadly effused, thin, closely adnate, pale pinkish buff to pale olive-buff in the herbarium, not shining, hypochnoid, rimose-granular into areas or granules about 2–3 to a mm., the margin thinning out, byssoid; in section 75–150  $\mu$  thick, not colored, composed of erect, thin-walled, hyaline hyphae  $2\frac{1}{2}$ –3  $\mu$  in diameter, of irregular outline, collapsing, nodose-septate; no gloeocystidia; spores hyaline, even,  $3\text{--}5 \times 2\frac{1}{2}$   $\mu$ , copious.

Fructifications 4–10 cm. long, 2–4 cm. wide.

On decaying frondose wood. France and Vermont. May to August.

This species is related to *Grandinia* by its granular aspect but the granules seem to have originated so largely from the cracking of the fructification to the substratum that I concur in the inclusion in *Corticium*. It has a more hypochnoid surface than *C. scutellare*.

Specimens examined:

France: Allier, *H. Bourdot*, 16064, 16065.

Vermont: Middlebury, Battell Ledge, *E. A. Burt*.

**57. *C. analogum* (B. & G.) Burt, n. comb.**

*Gloeocystidium analogum* Bourdot & Galzin, Soc. Myc. Fr. Bul. 28: 366. 1913.

Type: authentic specimen in Burt Herb.

Fructifications broadly effused, thick, adnate, fleshy-membranaceous, small pieces separable when moistened, becoming maize-yellow to chamois in the herbarium, somewhat colliculose, not cracked or but little cracked, not shining, the margin thinning out; in section 500–1000  $\mu$  thick, colored like the hymenium, becoming zonate or somewhat stratose, composed of hyphae 3–4  $\mu$  in diameter, densely interwoven, conglutinate and poorly defined, of great numbers of imbedded spores and gloeocystidia; gloeocystidia immersed in many zones or layers,  $40\text{--}80 \times 6\text{--}8$   $\mu$ , becoming dissolved by potassium hydrate solution; imbedded spores subglobose,  $5\text{--}6 \times 5$   $\mu$ , minutely rough, slightly colored in the deeper portions of the fructification, hyaline at the surface of the hymenium; spores on basidia not demonstrated.

Fructifications in fragments up to 8 cm. long, 3 cm. wide.

On decaying wood of *Quercus* and *Fraxinus* in France, of *Quercus* in Maine, and of *Populus trichocarpa* in Idaho. July to October. Probably rare.

*C. analogum* has general aspect and color of *C. galactinum* and *C. portentosum* and structure related to that of *C. effuscatum*. The thick, stratose fructifications, containing great numbers of imbedded spores and gloecystidia, afford good additional distinctive characters. The Maine specimens are doubtfully referred here as a young first-stratum stage.

Specimens examined:

France: Aveyron, A. Galzin, 12435, authentic specimen, comm. by H. Bourdot, 16164.

Maine: Kittery Point, R. Thaxter & E. A. Burt.

Idaho: Priest River, J. R. Weir, 25.

58. *C. effuscatum* Cooke & Ellis, Grevillea 9: 103. 1881; Sacc. Syll. Fung. 6: 633. 1888; Masee, Linn. Soc. Bot. Jour. 27: 142. 1890; Lyman, Boston Soc. Nat. Hist. Proc. 33: 176. pl. 21, f. 74-95, pl. 22, f. 96-105. 1907.

Type: in Kew Herb.

Fructifications broadly effused, rather thick, membranaceous, small pieces separable when moistened, honey-yellow to russet when fresh, fading to cream-buff in the herbarium, even, pulverulent, the margin thinning out; in section 200-500  $\mu$  thick, composed of very densely arranged, suberect, interwoven hyphae about 2  $\mu$  in diameter, gloecystidia, and chlamydospores; gloecystidia flexuous, 40-150  $\times$  5-9  $\mu$ , starting from the substratum; imbedded chlamydospores very numerous, globose, 5-6  $\mu$  in diameter, sometimes comprising nearly the whole fructification; basidiospores hyaline, even, 6  $\mu$  in diameter.

Fructifications 3-10 cm. long, 2-4 cm. wide.

On under side of decaying wood and bark of frondose species. Newfoundland and Canada to Louisiana and westward to Washington. September to November. Widely distributed and common locally.

*C. effuscatum* is conspicuous when fresh by its large salmon to brick-red fructifications. It soon fades in the herbarium to the pallid or buff color assumed in the herbarium by many species and

must then be cautiously separated from *C. confluens* and *Hypochnus pallescens* which may have the same aspect. The very numerous imbedded chlamydospores and elongated gloeocystidia of *C. effusatum* are its characters for such separation.

Specimens examined:

Exsiccati: Ellis, N. Am. Fungi, 1208.

Newfoundland: Bay of Islands, A. C. Waghorne, 1014 (in Mo. Bot. Gard. Herb., 4805).

Canada: J. Macoun, 16; Lower St. Lawrence Valley, J. Macoun, 3.

Ontario: Ottawa, J. Macoun, 455.

Quebec: Ironsides, J. Macoun, 280.

New Hampshire: Chocorua, W. G. Farlow, E (in Mo. Bot. Gard. Herb., 55001).

New York: Ithaca, G. F. Atkinson, 1002, 2113; North Greenbush, H. D. House, 14.236 (in Mo. Bot. Gard. Herb., 44735); Staten Island, W. H. Ballou; Tyre, C. H. Peck (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 57718); Westport, C. H. Peck (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 57770), and 1; White Plains, W. H. Ballou, 1, 2 (in Mo. Bot. Gard. Herb., 55623, 55628).

Pennsylvania: West Chester, Everhart & Haines, in Ellis, N. Am. Fungi, 1208.

District of Columbia: Washington, C. L. Shear, 1262.

Georgia: Tipton, C. J. Humphrey, 162.

Louisiana: A. B. Langlois, 249; St. Martinville, A. B. Langlois, Z.

Ohio: C. G. Lloyd, 3824.

Illinois: Bluff Lake, L. H. Pammel (in Mo. Bot. Gard. Herb., 60655).

Missouri: Creve Coeur, E. A. Burt (in Mo. Bot. Gard. Herb., 19458, 44071); Rose Hill, L. H. Pammel (in Mo. Bot. Gard. Herb., 60656); St. Louis, L. H. Pammel, comm. by Farlow Herb.; Upper Creve Coeur, E. A. Burt (in Mo. Bot. Gard. Herb., 54775).

Idaho: Priest River, J. R. Weir, 53.

British Columbia: Vancouver Island, Cedar Hill, J. Macoun.

Washington: Arlington, C. J. Humphrey, 7611 (in Mo. Bot. Gard. Herb., 10750); Kalama, C. J. Humphrey, 6160.

**59. *C. abeuns* Burt, n. sp.**

Type: in Burt Herb.

Fructification broadly effused, thin, membranaceous, tender, small pieces separable when moistened, whitish to ivory-yellow and cream-buff in the herbarium, even, not cracked or but little cracked, the margin whitish, thinning out, composed of interwoven hyphae; in section 100–240  $\mu$  thick, not colored, composed of somewhat erect, interwoven hyphae  $2\frac{1}{2}$ –3  $\mu$  in diameter, not incrusted, and of slender gloeocystidia; gloeocystidia 30–60  $\times$  4–7  $\mu$ , numerous, immersed; spores hyaline, even, subglobose, 6–7  $\times$  4–6  $\mu$ , copious.

Fructifications 4–13 cm. long, 2–5 cm. wide.

On decaying coniferous wood, rarely on bark of frondose species. Maine to Alabama, in British Columbia and New Mexico, and in Japan and South Africa. July to October. Infrequent.

*C. abeuns* has the aspect of *C. lacteum* and *C. radiosum* and spores of nearly the same size as in these species but not quite as globose and further notably distinct from both by its slender, flexuous gloeocystidia.

Specimens examined:

Maine: Piscataquis County, *W. A. Murrill*, 1938 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 63765).

New Hampshire: North Conway, *W. H. Snell*, 626 (in Mo. Bot. Gard. Herb., 59293).

New York: Alcove, *C. L. Shear*, 1215; Freeville, *G. F. Atkinson*, 2595; Karner, *C. H. Peck*, comm. by N. Y. State Mus. Herb., T 7 (in Mo. Bot. Gard. Herb., 54557) and another specimen (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55784).

Alabama: Goldbranch, *J. R. Weir*, 10958 (in Mo. Bot. Gard. Herb., 63240); Montgomery, *R. P. Burke*, 229, type, and 471 (in Mo. Bot. Gard. Herb., 57100, 57289).

Wisconsin: Madison, *M. C. Jensen*, comm. by C. J. Humphrey, 617 (in Mo. Bot. Gard. Herb., 44785).

British Columbia: Sidney, *J. Macoun*, 490, 812 (in Mo. Bot. Gard. Herb., 55314, 62117); Squamish, *J. Macoun*, 496 (in Mo. Bot. Gard. Herb., 55184).

New Mexico: Datil National Forest, *W. H. Long*, 21046 (in Mo. Bot. Gard. Herb., 55145).

Japan: Awaji, A. Yasuda, 12, 80 (in Mo. Bot. Gard. Herb., 55660, 56311).

Africa: Houtbos, Transvaal, P. A. van der Bijl, 1495.

**60. *C. ravum* Burt, n. sp.**

Type: in Burt Herb.

Fructifications broadly effused, closely adnate, thin, not separable, becoming pale pinkish buff to light buff in the herbarium, even, not shining, becoming cracked at the center, the margin thinning out, concolorous; in section 45–150  $\mu$  thick, not colored, composed of densely arranged hyphae, interwoven near substratum but erect towards the hymenium, of numerous gloeocystidia, and of very slender paraphyses; gloeocystidia 20–80  $\times$  7–11  $\mu$ , the more ovoid ones nearer the substratum; paraphyses more or less numerous in the hymenial surface, very slender, hyaline, curved,  $\frac{1}{2}$ –1  $\mu$  in diameter; spores white in spore collection, even, 6–8  $\times$  4–4 $\frac{1}{2}$   $\mu$ .

Fructifications up to 10 cm. long, 2 cm. wide, broken off at both ends.

On fallen frondose limbs. Florida to Louisiana, in Missouri, Cuba, and Brazil. August to February.

*C. ravum* has grayish fructifications closely resembling well-developed ones of *C. rubrocanum* in general aspect but distinct by gloeocystidia.

Specimens examined:

Florida: C. G. Lloyd, 4832.

Alabama: Montgomery, R. P. Burke, 126 (in Mo. Bot. Gard. Herb., 5282).

Louisiana: St. Martinville, A. B. Langlois, 1765 and N, type.

Missouri: Creve Coeur, E. A. Burt (in Mo. Bot. Gard. Herb., 44045).

Cuba: Omaja, C. J. Humphrey, 3056.

Brazil: Rio de Janeiro, J. N. Rose, 21462, comm. by N. Y. Bot. Gard. Herb.

**61. *C. mexicanum* Burt, n. sp.**

Type: in Mo. Bot. Gard. Herb., and N. Y. Bot. Gard. Herb.

Fructifications adnate, small, circular, becoming confluent,

rather thick, fleshy-membranaceous, separable when moist, cream color to cream-buff in the herbarium, somewhat velvety or fibrillose, not cracked, the margin concolorous, fimbriate; in section  $400\ \mu$  thick, not colored, with hyphae next to the substratum longitudinally and densely arranged, thick-walled, not incrusted, not nodose-septate, curving outward obliquely into the hymenium; gloeocystidia numerous in the hymenium and subhymenium, clavate or cylindric,  $60\text{--}120 \times 9\text{--}12\ \mu$ ; spores few, even, hyaline, not seen attached to basidia,  $9\text{--}11 \times 6\text{--}7\ \mu$ .

Fructifications at first 2–3 mm. in diameter, becoming confluent into a mass 2 cm. long, 5 mm. wide.

On very rotten wood. Mexico. January.

On account of the loose attachment of the fructification to the substratum and the broad layer of longitudinally arranged hyphae it is possible that *C. mexicanum* may be the resupinate stage of a *Stereum*, but if so, it is distinct from any *Stereum* known to me.

Specimens examined:

Mexico: Xuchiles, near Cordoba, W. A. & E. L. Murrill, 1196, type, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54604).

62. *C. epigaeum* Ell. & Ev. Jour. Myc. 1: 88. 1885; Sacc. Syll. Fung. 6: 631. 1888.

Type: in N. Y. Bot. Gard. Herb.

Fructifications effused, thin, membranaceous, tender, small pieces separable when moistened, white, becoming somewhat pinkish buff in the herbarium, not cracked, the margin concolorous, thinning out; in section  $175\text{--}250\ \mu$  thick, not colored, 2-layered, the layer next to the substratum about  $75\ \mu$  thick, consisting of densely interwoven hyphae about  $2\frac{1}{2}\text{--}3\ \mu$  in diameter, not showing characters clearly in the type; hymenial layer  $100\text{--}150\ \mu$  thick, composed of densely arranged hyphae, gloeocystidia, and basidia; gloeocystidia elongated; spores hyaline, even,  $5\frac{1}{2}\text{--}6 \times 5\ \mu$ , confined to hymenial surface.

Fructifications 2–5 cm. long, 1–3 cm. wide.

On bare ground and rotten wood on the ground. New Hampshire to British Columbia, Washington, and Oregon. August to April. Rare.

*C. epigaeum* is characterized by white color, 2-layered structure, elongated gloecystidia, and large, subglobose spores. It is related to *C. lactescens* but does not become stratose nor cracked nor as hard and compact as the latter. The type specimen itself should be used for comparison rather than the specimens from widely separated localities which seem to me probably to be *C. epigaeum*.

Specimens examined:

New Hampshire: Chocorua, *W. G. Farlow* (in Mo. Bot. Gard. Herb., 13954).

New York: Karner, *H. D. House*, comm. by N. Y. State Mus. Herb., 14.160 (in Mo. Bot. Gard. Herb., 44705).

Ohio: Cincinnati, *C. G. Lloyd*, 4517.

Michigan: New Richmond, *C. H. Kauffman*, 20 (in Mo. Bot. Gard. Herb., 9905).

British Columbia: Hastings, *J. Macoun*, 129.

Washington: Bingen, *W. N. Suksdorf*, 896, 754.

Oregon: *Carpenter*, 100, type (in N. Y. Bot. Gard. Herb.).

**63. *C. lactescens*** Berkeley, Outl. Brit. Fung. 274. 1860; Fries, Hym. Eur. 650. 1874; Sacc. Syll. Fung. 6: 612. 1888; Masee, Linn. Soc. Bot. Jour. 27: 138. 1890; Bresadola, Ann. Myc. 1: 95. 1903; Wakefield, Brit. Myc. Soc. Trans. 4: 118. pl. 3, f. 6-8. 1913; Rea, Brit. Basid. 685. 1922.

*Thelephora lactescens* Berkeley in Hooker, Eng. Fl. 2<sup>o</sup>: 169. 1836.—*Gloeocystidium lactescens* (Berk.) v. Höhnelt. & Litschauer, K. Akad. Wiss. Wien Sitzungsber. 116: 784. 1907; Bourdot & Galzin, Soc. Myc. Fr. Bul. 28: 366. 1913.—*Corticium Brinkmanni* Bresadola in Brinkmann, Westfälische Prov.-Vereins f. Wiss. u. Kunst Jahresber. 26: 128. 1898.

Type: in Kew Herb.

Fructifications broadly effused, rather thick, closely adnate, waxy-fleshy, small pieces separable, whitish to flesh color and buff-pink when fresh, becoming light buff to avellaneous in the herbarium, even, contracting greatly in drying and forming in thick fructifications very numerous short fissures with somewhat resin-colored sides, the margin whitish, narrow, when fresh exuding a watery white milk where wounded; in section 200-1000  $\mu$

thick, pale avellaneous, becoming stratose when old and thick, with a narrow layer of hyphae arranged longitudinally along the substratum and the remainder of the fructification composed, according to age, of one or more strata of erect, agglutinated hyphae, basidia, and gloeocystidia; gloeocystidia very numerous, flexuous,  $60-120 \times 4-9 \mu$ ; spores hyaline, even, flattened on one side,  $4-8 \times 3-6 \mu$ , copious.

Fructifications 4-10 cm. long, 1-4 cm. wide.

On decaying wood of logs of frondose species. In Europe, Canada to Louisiana, and westward to the Pacific states, in the West Indies, and in Mexico. Throughout the year. Widely distributed but not common.

*C. lactescens* is best recognized in thick stratose fructifications by their cracking into short and usually disconnected fissures, stratose and agglutinated structure, occurrence on frondose wood, very numerous gloeocystidia, and rather large spores.

Specimens examined:

Exsiccati: Berkeley, Brit. Fungi, 21.

Sweden: Stockholm, *L. Romell*, 176; Tyresö, *L. Romell*, *C.*

Germany: Westfalia, Lengerich, *W. Brinkmann*, part of type of *Corticium Brinkmanni* from Bresadola.

Austria: Innsbruck, Tirol, *V. Litschauer*, 2 specimens; N. Austria, *V. Litschauer*.

Italy: Trent, *G. Bresadola*; Pisa, *T. Archangeli*, comm. by Herb. Horti Pisani (in Mo. Bot. Gard. Herb., 44564).

France: Bois de Boulogne, Paris, *G. F. Atkinson*.

England: *M. J. Berkeley*, in Berkeley, Brit. Fungi, 21; West Farleigh, *M. J. Berkeley* (in Kew Herb.); West Walling, *M. J. Berkeley* (in Kew Herb.).

Canada: *J. Macoun*, 12, 20, 81; Hemlock Lake, Beechwood, *J. Macoun*, 450; Billings Bridge, *J. Macoun*, 55; Carleton Place, *J. Macoun*, 91; Lower St. Lawrence Valley, *J. Macoun*, 26, 32, 36; Ontario, Belleville, *J. Macoun*, 531.

Newfoundland: Bay of Islands, *A. C. Waghorne*, 477 (in Mo. Bot. Gard. Herb., 4833).

Maine: Kittery Point, *R. Thaxter* & *E. A. Burt*.

Vermont: Middlebury, *E. A. Burt*; Silver Lake, Leicester, *E. A. Burt*.

- Massachusetts: Arlington, *A. P. D. Piguet*, comm. by W. G. Farlow, 34.
- New York: Kirkville, *L. M. Underwood*, 55 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61566); Ithaca, *Thom*, comm. by Cornell Univ. Herb., 13725; Vaughns, Hudson Falls, *S. H. Burnham*, 26 (in Mo. Bot. Gard. Herb., 54492).
- North Carolina: Biltmore Estate, *W. A. Murrill* (in N. Y. Bot. Gard. Herb., Mo. Bot. Gard. Herb., 61564, and Burt Herb.).
- Louisiana: Baton Rouge, *Edgerton & Humphrey*, comm. by C. J. Humphrey, 5650.
- Tennessee: Unaka Springs, *W. A. Murrill*, 623 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61565).
- Michigan: Mass, *C. J. Humphrey*, 1638 (in Mo. Bot. Gard. Herb., 14228).
- British Columbia: Sidney, *J. Macoun*, 76, 378, 496 (in Mo. Bot. Gard. Herb., 5752, 55316, 55317).
- Washington: Bingen, *W. N. Suksdorf*, 909, 911.
- Oregon: Corvallis, *S. M. Zeller*, 1771, 1905 (in Mo. Bot. Gard. Herb., 56848, 56881).
- California: Pasadena, *A. J. McClatchie*, 786 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61461).
- Mexico: Jalapa, *W. A. & E. L. Murrill*, 68, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 1682).
- Porto Rico: Rio Piedras, *J. A. Stevenson*, 3357, 5576 (in Mo. Bot. Gard. Herb., 7688, 11346).
- Grenada: Grand Etang, *R. Thaxter*, comm. by W. G. Farlow, 16.

**64. *C. salmoneum* Burt, n. sp.**

Type: in Burt Herb. and in Farlow Herb.

Fructifications broadly effused, adnate, rather thick, somewhat membranaceous, small pieces separable when moist, "orange-salmon" when fresh, becoming vinaceous-buff in the herbarium, even, somewhat velvety, not shining, not at all cracked, the margin similar, determinate, thinning abruptly; in section 360  $\mu$  thick, not colored, composed of densely interwoven hyphae 3–6  $\mu$  in diameter, thin-walled, not incrustated, glued together so that the outline is not clearly defined; gloeocystidia cylindric, up to  $100 \times 8-9 \mu$ , very numerous, confined to the hymenium; spores hyaline, even,  $5 \times 3\frac{1}{2} \mu$ .

Fructifications 4–6 cm. long,  $1\frac{1}{2}$ – $2\frac{1}{2}$  cm. wide, and broken off on three sides in the specimens seen. Probably large.

On bark of decaying frondose wood. West Indies.

This tropical species is somewhat related to *C. lactescens* but differs in not becoming cracked nor stratose and in having its gloeocystidia of nearly equal length and arranged side by side in palisade manner in the hymenial layer.

Specimens examined:

Grenada: Chilly Brook, Grand Etang, *R. Thaxter*, type, comm. by W. G. Farlow, 16.

**65. *C. Macounii* Burt, n. sp.**

Type: in Burt Herb.

Fructifications widely effused, closely adnate, soft and fleshy when fresh, drying somewhat cartilaginous, small pieces separable when moistened, white, becoming ivory-yellow in the herbarium, even, sometimes cracking in drying, the margin thinning out; in section 60–150  $\mu$  thick, not colored, with the hyphae suberect, branching,  $2\frac{1}{2}$ –3  $\mu$  in diameter; gloeocystidia, or perhaps conducting organs, very slender,  $30\text{--}90 \times 3\text{--}3\frac{1}{2}$   $\mu$ , starting from the substratum; spores hyaline, even, subglobose, slightly flattened on one side,  $8\text{--}10 \times 6\text{--}9$   $\mu$ , pointed at base, copious.

Fructifications 3–8 cm. long, 1–2 cm. wide.

On decorticated, decaying pine wood. Canada, and perhaps New Hampshire and New York. October. Rare.

*C. Macounii* is much thinner than *C. Berkeleyi* and contracts in drying to a horn-like coating on the wood. The gloeocystidia or conducting organs are distinctive but inconspicuous. The specimens from New Hampshire and New York are a little thicker than the Canadian specimens by the presence of a layer of hyphae densely arranged, parallel with the substratum.

Specimens examined:

Canada: Lower St. Lawrence Valley, *J. Macoun*, 86.

Quebec: Hull, *J. Macoun*, 368, type.

New Hampshire: Chocorua, *W. G. Farlow*.

New York: Ithaca, *G. F. Atkinson*, 14102.

**66. *C. argentatum* Burt, n. sp.**

Type: in Burt Herb.

Fructifications long-effused, thin, closely adnate, not at all separable, pale drab-gray, even, somewhat pruinose, becoming cracked, the margin similar or whitish, thinning out; in section  $150\ \mu$  thick, colored buffy brown, composed of densely arranged, interwoven, erect hyphae and gloecystidia; the hyphae about  $3\ \mu$  in diameter, incrusting near the substratum; gloecystidia very numerous in all regions, usually flexuous,  $40-50 \times 8-12\ \mu$ , but some  $6-12\ \mu$  in diameter in the form of spherical brown masses; spores hyaline, even,  $4-6 \times 3\ \mu$ —few found and may not belong.

Fructification 10 cm. long, 1 cm. wide.

On under side of small branches of *Salix*. Nebraska. February. Apparently local.

*C. argentatum* has aspect so similar to *Peniophora cinerea* and *C. subcinerea* that microscopic examination of sections is necessary to separate it from these more common species. Distinguishing characters are the silvery color externally and brown color within and numerous gloecystidia, some of which have the form of brown spherical masses such as occur in *Peniophora serialis*.

Specimens examined:

Nebraska: Long Pine, *C. L. Shear*, 1094, type.

**67. *C. septentrionale* Burt, n. sp.**

Type: in Mo. Bot. Gard. Herb.

Fructifications broadly effused, adnate, thin, small pieces separable when moist, drying snow-white, waxy, pulverulent, cracking by wide fissures into rectangular masses about  $3 \times 2$  mm., the margin similar, composed of interwoven hyphae; in section  $150-200\ \mu$  thick, not colored, composed of hyphae loosely arranged below, suberect, bushy-branched, nodose-septate,  $3-3\frac{1}{2}\ \mu$  in diameter, not incrusting; gloecystidia flexuous, up to  $45 \times 6\ \mu$ , sometimes capitate or moniliform at apex, confined to the hymenial layer; spores hyaline, even, cylindric,  $6-8 \times 2-2\frac{1}{2}-3\ \mu$ , not numerous; basidia with 4 sterigmata.

Fructifications 5 cm. long, 2 cm. wide, broken off at both ends.

On decaying, weathered, frondose wood. Alabama and Manitoba. October.

Among the species having gloecystidia *C. septentrionale* is

noteworthy by its snow-white color; the long spores and gloeocystidia with occasionally capitate or moniliform apex may be helpful, confirmatory characters.

Specimens examined:

Alabama: Montgomery Co., *R. P. Burke*, 672 (in Mo. Bot. Gard. Herb., 63092).

Manitoba: Winnipeg, *G. R. Bisby*, 1346, type (in Mo. Bot. Gard. Herb., 60556).

68. *C. stramineum* Bresadola, *Hedwigia* 39: (221). 1900; *Sacc. Syll. Fung.* 16: 193. 1902.

*Gloeocystidium stramineum* Bresadola in Brinkmann, *Westfälische Pilze*, 18; Bourdot & Galzin, *Soc. Myc. Fr. Bul.* 28: 361. 1913.—See Wakefield, *Brit. Myc. Soc. Trans.* 4: 341. 1918.

Type: type distribution in Brinkmann, *Westfälische Pilze*, 18.

Fructifications broadly effused, adnate, thin, somewhat membranaceous, small pieces separable when moist, becoming cartridge-buff to cream-buff in the herbarium, even, becoming somewhat cracked, the margin thinning out, pruinose, similar; in section 100–200  $\mu$  thick, not colored, composed of suberect, interwoven hyaline hyphae 2–3  $\mu$  in diameter, not incrustated, and of elongated gloeocystidia; gloeocystidia flexuous, tapering towards apex, 40–100  $\times$  4½–9  $\mu$ ; spores hyaline, even, 4–6  $\times$  2–3  $\mu$ , not copious.

Fructifications 2–8 cm. long, 1–3 cm. wide.

On bark of decaying *Alnus*, *Acer rubrum*, and *Carya*. In Europe, and from Canada to South Carolina and westward to British Columbia and in Mexico. September to January. Rare.

*C. stramineum* may be recognized among our species having gloeocystidia, by its thin, whitish to straw-colored fructification on *Acer rubrum*.

Specimens examined:

Sweden: *L. Romell*, 419.

Germany: Lengerich, Westphalia, *W. Brinkmann*, part of type from Bresadola.

Austria: Tirol, *V. Litschauer*, 4 specimens from Innsbruck, Klosterberg, Stubai, and Volders, respectively.

Canada: *J. Macoun*, 28; Ontario, Ottawa, *J. Macoun*, 18.

New Hampshire: Chocorua, *W. G. Farlow*, 31 and unnumbered specimen.

Vermont: Middlebury, *E. A. Burt*.

New York: Bronx Park, *L. M. Underwood* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61594); Ithaca, *G. F. Atkinson*, 3087; Karner, *H. D. House* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 54365, 54362).

New Jersey: Newfield, *J. B. Ellis*, comm. by N. Y. Bot. Gard. Herb.

Maryland: Takoma Park, *C. L. Shear*, 1338.

South Carolina: Hartsville, *W. C. Coker*, 3947 (in Mo. Bot. Gard. Herb., 57415).

Kentucky: Crittenden, *C. G. Lloyd*, 3124.

Missouri: Creve Coeur, *F. P. McWhorter* (in Mo. Bot. Gard. Herb., 57451).

British Columbia: Sidney, *J. Macoun*, 74, 80, in part (in Mo. Bot. Gard. Herb., 5749, 5750).

Mexico: Orizaba, *W. A. & E. L. Merrill*, 763, comm. by N. Y. Bot. Gard. Herb., 54634.

**69. *C. Litschaueri* Burt, n. sp.**

Type: in Burt Herb.

Fructifications broadly effused, adnate, thin, somewhat membranaceous, small pieces separable when moistened, between ivory-yellow and olive-buff in the herbarium, even, becoming somewhat cracked, not shining, the margin thinning out; in section 200  $\mu$  thick, not colored, composed of loosely interwoven, thick-walled hyphae 3  $\mu$  in diameter, nodose-septate, not incrustated; gloeocystidia flexuous, 45–120  $\times$  4½–6  $\mu$ , in all regions of the fructification; spores hyaline, even, cylindric, flattened on one side, 9–10  $\times$  3–3½  $\mu$ , four to a basidium.

Fragments of fructification 2 cm. long, 1–1½ cm. wide, broken off on three sides.

On bark of *Alnus* and apple. North Dakota and Oregon.

*C. Litschaueri* has the aspect of *C. stramineum* and occurs on a frequent substratum of the latter but the spores of *C. Litschaueri* are the larger and the hyphae are thicker-walled than those of *C. stramineum* and more like those of *P. crenea*.

## Specimens examined:

North Dakota: *Brenckle*, comm. by V. Litschauer, 1, type.

Oregon: Corvallis, *S. M. Zeller*, 2219 (in Mo. Bot. Gard. Herb., 63029).

**70. *C. protrusum* Burt, n. sp.**

Type: in Mo. Bot. Gard. Herb.

Fructifications broadly effused, rather thick, dry, felty-membranaceous, separable, drying between light buff and cream color, even, conforming to irregularities of the substratum, not cracked, the margin a little paler than the hymenium, thinning out, with the hyphae interwoven; in section 500  $\mu$  thick, not colored, 2-layered, with (1) a broad layer next to the substratum of very densely and longitudinally arranged hyphae, and with (2) a somewhat more loosely arranged layer of interwoven, suberect, hyaline hyphae 4–4½  $\mu$  in diameter, not incrusted, and occasional gloeocystidia; gloeocystidia flexuous, up to  $60 \times 4\frac{1}{2}$ –5  $\mu$ ; basidia 4-spored, not side by side and adhering together in a compact palisade layer but very numerous and protruding individually 6–15  $\mu$ ; spores attached to basidia are hyaline, even,  $6 \times 2\frac{1}{2}$ –3  $\mu$ , tapering towards the base, not copious.

Fructification 6 cm. long, 5 cm. wide, broken off on one side and at one end—probably large.

On bark of a badly decayed frondose log in a moist virgin forest. Mexico. December.

*C. protrusum* has a large fructification of general aspect and color of that of *C. portentosum* and *C. galactinum* but softer than these, of quite different structure, and having gloeocystidia. The basidia protrude beyond the general level of the fructification in the manner of cystidia; the presence of spores at the apex shows convincingly their real nature.

## Specimens examined:

Mexico: Jalapa, *W. A. & E. L. Merrill*, 157, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 10354).

**71. *C. livido-caeruleum* Karsten**, Notiz ur Sällsk. pro Faun. et Fl. Fenn. Förh. 9: 370. 1868; Finska Vet.-Soc. Bidrag Natur och Folk 25: 315. 1876; 48: 415. 1889; Icones Hym. Fenniae

3: 8. f. 75. 1889; Fries, Hym. Eur. 652. 1874; Sacc. Syll. Fung. 6: 623. 1888; Masee, Linn. Soc. Bot. Jour. 27: 152. 1890.

*Gloeocystidium livido-caeruleum* (Karst.) v. Höhnelt & Litschauer, K. Akad. Wiss. Wien Sitzungsber. 115: 1554. 1906; Bourdot & Galzin, Soc. Myc. Fr. Bul. 28: 355. 1913.—An *Corticium plumbeum* Fries, Hym. Eur. 653. 1874?

Type: studied from Karsten Herb. in Helsingfors by v. Höhnelt & Litschauer, *loc. cit.*

Fructifications long-effused, agglutinate, waxy-soft, not separable, white at first, then darkening in spots, finally more or less completely slate-gray to dark plumbeous, white, pruinose, rarely cracked; in section 100–250  $\mu$  thick, colored within when mature by 1–3 bluish black layers whose color is unchanged in lactic acid mounts but becomes at first vinaceous and is then dissolved and the sections bleached by potassium hydrate solution; very young fructifications not colored within; hyphae about 3  $\mu$  in diameter, glued together so that the outline is not clearly shown; gloeocystidia elongated, flexuous, 30–60  $\times$  3–6  $\mu$ ; spores hyaline, even,  $4\frac{1}{2}$ –6  $\times$   $2\frac{1}{2}$ –3 $\frac{1}{2}$   $\mu$ .

Fructifications 1–10 cm. long, 2 mm.–3 cm. wide.

Under side of decaying coniferous rails, boards, and shingles, recorded on *Abies*, *Pinus* and *Thuja*. In Europe and in Canada, Vermont, New York, Montana, and Manitoba. April to September. Infrequent.

The dark lead color of one or more layers in the interior of the fructifications and the destruction of the coloring pigment by seven per cent potassium hydrate solution, together with the presence of gloeocystidia, afford a group of characters by which *C. livido-caeruleum* may be confidently recognized. Karsten did not send me an authentic specimen of his *C. livido-caeruleum* but he sent a specimen with the same characters under the name *Corticium plumbeum* Fr.

Specimens examined:

Sweden: L. Romell, 107; Lappland, L. Romell, 409.

Finland: Mustiala, P. A. Karsten, under the name *C. plumbeum* Fr.

Austria: Tirol, Innsbruck, V. Litschauer; Stubai, V. Litschauer.

Canada: J. Macoun, 37.

Vermont: Middlebury, *E. A. Burt*, 2 gatherings.

New York: Altamont, *E. A. Burt*.

Montana: Fontaine, *E. E. Hubert*, comm. by J. R. Weir (in Mo. Bot. Gard. Herb., 63234); Missoula, *J. R. Weir*, 420 (in Mo. Bot. Gard. Herb., 14767), and *E. E. Hubert*, comm. by J. R. Weir, 11961 (in Mo. Bot. Gard. Herb., 63318); Trego, *E. E. Hubert*, comm. by J. R. Weir, 11975 (in Mo. Bot. Gard. Herb., 63331).

Idaho: Avery, *E. E. Hubert*, comm. by J. R. Weir, 11987 (in Mo. Bot. Gard. Herb., 63320).

Manitoba: Norway House, *G. R. Bisby*, 1462 (in Mo. Bot. Gard. Herb., 61644).

British Columbia: Kootenai Mts., near Salmo, *J. R. Weir*, 466 (in Mo. Bot. Gard. Herb., 14936).

**72. *C. pilosum* Burt, n. sp.**

Type: in Mo. Bot. Gard. Herb.

Fructifications effused, becoming confluent, closely adnate, very thin, not separable, pale pinkish buff, becoming pale olive-buff and pale smoke-gray in the herbarium, even, not shining, but little or not at all cracked, the margin of the same color, thinning out; in section 30–75  $\mu$  thick, not colored, composed of densely interwoven, hyaline hyphae 2–2½  $\mu$  in diameter, not incrustated, of gloeocystidia, and of delicate, branching paraphyses; gloeocystidia near the substratum, spherical or pyriform, 16–30  $\mu$  in diameter or up to 30  $\times$  15  $\mu$ , narrower gloeocystidia may be present also; paraphyses with slender branching tips about 1  $\mu$  in diameter occur in the surface of the hymenium; spores hyaline, even, curved, 6–9  $\times$  3–4½  $\mu$ .

Fructifications becoming confluent over areas up to 8 cm. long and 1–2 cm. wide.

On bark of fallen limbs of *Alnus*, *Vitis*, and *Tsuga*. Georgia, Alabama and Missouri. October and April. Not common.

*C. pilosum* has general aspect and color suggestive of the *Peniophora cinerea* group of species but has no cystidia. The slender branching paraphyses have been noted also in *Peniophora phylliphila*, *C. albido-carneum*, *C. Atkinsonii*, and *C. jamaicense*. Perhaps *C. pilosum* is mature *C. albido-carneum*.

## Specimens examined:

Georgia: Atlanta, *E. Bartholomew*, 8982, type (in Mo. Bot. Gard. Herb., 63463).

Alabama: Auburn, *Earle & Baker* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 63709, 61479); Montgomery, *R. P. Burke*, 16, 217, 350, 452, 613 (in Mo. Bot. Gard. Herb., 4738, 57089, 57221, 57275, 57443).

Missouri: Baden, *E. A. Burt* (in Mo. Bot. Gard. Herb., 18864).

73. *C. radiosum* Fries, *Epier.* 560. 1838; *Icones Hym.* 2: 97. *pl.* 198, *f.* 1. 1884; *Hym. Eur.* 649. 1874; *Sacc. Syll. Fung.* 6: 611. 1888; *Bresadola, I. R. Accad. Agiati Atti III.* 3: 110. 1897; *Rea, Brit. Basid.* 685. 1922.

*Thelephora radiosa* Fries, *Obs. Myc.* 2: 277. 1818; *Elench. Fung.* 1: 206. 1828; *Persoon, Myc. Eur.* 1: 130. 1822.—*Corticium pellicula* (Fr.) *Karsten, Soc. pro Fauna et Fl. Fenn. Meddel.* 11: 5. 1885.—*Corticium alutaceum* (Schrad.) *Bresadola, I. R. Accad. Agiati Atti III.* 3: 110. 1897; *v. Höhnelt & Litschauer, K. Akad. Wiss. Wien Sitzungsber.* 115: 1556. 1906.—*Gloeocystidium alutaceum* (Schrad.) *Bourdot & Galzin, Soc. Myc. Fr. Bul.* 28: 367. 1913.—An *Thelephora alutacea* *Schrader, Spic. Fl. Germ.* 1: 187. 1794?

Type: type illustration is Fries, *Icones Hym.* 2: *pl.* 198, *f.* 1. 1884. No authentic specimen determined, by E. Fries as *Thelephora* (or *Corticium*) *radiosa* is known.

Fructifications broadly effused, thin, membranaceous, tender, small pieces separable, from whitish to ivory-yellow and cream-buff in the herbarium, even, but little cracked, the margin white, broad, radiating, fibrillose; in section 100–300  $\mu$  thick, not colored, composed of densely interwoven, ascending hyphae rather crowded together except where separated by vesicular bodies which become greatly inflated and thin-walled and are finally up to 20–60  $\times$  15  $\mu$ ; spores hyaline, even or slightly rough, subglobose, 4½–7  $\mu$  in diameter or 6  $\times$  4½–5  $\mu$ .

Fructifications 3–15 cm. long, 1–7 cm. wide.

On decaying wood of coniferous species usually. In Europe, Canada to Pennsylvania, and westward to Alaska, British Columbia, and Washington.

*C. radiosum* may be recognized by its occurrence on coniferous wood, whitish or ivory-yellow color, white fimbriate margin, subglobose spores about  $6\ \mu$  in diameter, and presence of very large vesicular bodies when sections are examined. These bodies are often so inflated and with walls so tenuous that their location is shown by vesicular spaces between the otherwise crowded hyphae.

No authentic specimen of *C. radiosum* determined by E. Fries is known to be in existence, although there are four specimens so determined by Karsten in Herb. Fries; two of these specimens are *Peniophora laevis*, another is very immature but may be *Stereum odoratum*, while the fourth specimen, Karsten, No. 32, has globose spores  $6-8 \times 5-6\ \mu$  but does not show vesicular bodies in my mount. However, these four specimens present the Karsten idea of *C. radiosum* as to aspect. The colored illustration of *C. radiosum* in Fries' *Icones*, *pl. 198, f. 1*, is excellent, and taken in connection with the good original description by Fries and his critical comment on the close resemblance to his *Peniophora laevis*, seems to me to afford a more secure foundation for the concept of this species as *C. radiosum* than as *Corticium alutaceum*, for Schrader's description of *Thelephora alutacea* consists of the following five words, viz., "Supra exalbida, subtus tomentosa nivea." This vague description is not supplemented by an illustration, and I have not been able to learn of the existence of an authentic specimen. Any statement as to synonymy in the case of resupinate Hymenomycetes by mycologists of a former century is of slight value when a nice feature of internal structure is decisive.

Specimens examined:

Exsiccati: Ell. & Ev., Fungi Col., 1211, under the name *Corticium Petersii*.

Sweden: Femsjö, *L. Romell*, 177; Stockholm, *L. Romell*, 113, 178, 181.

Austria: Innsbruck, Tirol, *V. Litschauer*; Stubai, Tirol, *V. Litschauer*, 2 specimens—all as *C. alutaceum*.

Hungary: Tatra Magna, *V. Greschik*, from Bresadola, under the name *C. alutaceum*.

Canada: Lower St. Lawrence Valley, *J. Macoun*, 87; Ontario, Ottawa, *J. Macoun*, 133, 204.

- Vermont: Bethel, *P. Spaulding*, comm. by U. S. Path. & Myc. Coll., 2708; Middlebury, *E. A. Burt*, 2 gatherings.
- Massachusetts: Sharon, *A. P. D. Piquet* (in Farlow Herb., 127, and Mo. Bot. Gard. Herb., 55234).
- New York: Albany, *H. D. House* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 59672); Constableville, *C. H. Peck*, comm. by N. Y. State Mus. Herb., T 3 (in Mo. Bot. Gard. Herb., 54556, 55774); Fort Ann, *S. H. Burnham*, 11 (in Mo. Bot. Gard. Herb., 54508); Freeville, *G. F. Atkinson*, 2585; Ithaca, *G. F. Atkinson*, 2527, 14186; Schuylerville, *C. H. Peck*, 19, and an unnumbered specimen (in N. Y. State Mus. Herb., 55772).
- New Jersey: Newfield, *J. B. Ellis* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 54450).
- Pennsylvania: Bellefonte, *L. O. Overholts*, 3729 (in Mo. Bot. Gard. Herb., 55098); State College, *C. R. Orton*, 2, comm. by L. O. Overholts (in Mo. Bot. Gard. Herb., 44041).
- West Virginia: Nuttallburg, *L. W. Nuttall*, in Ell. & Ev., Fungi Col., 1211.
- Tennessee: Elkmont, *C. H. Kauffman*, 89 (in Mo. Bot. Gard. Herb., 44990).
- Michigan: Ann Arbor, *C. H. Kauffman*, 36 (in Mo. Bot. Gard. Herb., 19327); East Lansing, *E. A. Bessey* (in Mo. Bot. Gard. Herb., 56178); New Richmond, *C. H. Kauffman*, 50 (in Mo. Bot. Gard. Herb., 18523).
- Missouri: Creve Coeur *L. O. Overholts* (in Mo. Bot. Gard. Herb., 42602).
- Arkansas: Fordyce, *C. J. Humphrey*, 2528 (in Mo. Bot. Gard. Herb., 14057).
- Washington: Bellingham, *J. R. Weir*, 546 (in Mo. Bot. Gard. Herb., 63744); Olympic Mts., comm. by W. G. Farlow, 3 (in Mo. Bot. Gard. Herb., 44588); Sedro-Woolley, *C. J. Humphrey*, 7483.
- British Columbia: Sidney, *J. Macoun*, 25 (in Mo. Bot. Gard. Herb., 5686).
- Alaska: Ketchikan, *J. R. Weir*, 329 (in Mo. Bot. Gard. Herb., 16437).

**74. *C. vesiculosum* Burt, n. sp.**

Type: in Burt Herb.

Fructifications broadly effused, closely adnate, thin, between ivory-yellow and cream color in the herbarium, waxy, even, not cracked, the margin thinning out; in section 150–240  $\mu$  thick, not colored, somewhat stratose, with the 3 strata or layers of the type separated by narrow zones of hyphae glued together; hyphae about 2  $\mu$  in diameter, thin-walled, collapsing, poorly defined, densely interwoven; gloecystidia up to  $40 \times 8 \mu$ ; many vesicular bodies, presumably gloecystidia, are present and are 5–7  $\mu$  in diameter—also larger vesicular spaces; spores hyaline, even,  $4-8 \times 2\frac{1}{2}-4 \mu$ , borne on protruding basidia having 4 sterigmata.

Fructifications in fragments up to 4 cm. long,  $1\frac{1}{2}$  cm. wide.

On decaying, frondose wood. Canada and New York. October.

*C. vesiculosum* is colored like *C. radiosum* but is closely adnate, does not have a radiating, fibrillose margin, and has smaller spores.

Specimens examined:

Canada: *J. Macoun*, 71, type.

New York: East Galway, *E. A. Burt*.

**75. *C. globosum* Burt, n. sp.**

Type: in Mo. Bot. Gard. Herb.

Fructifications effused, thick, adnate, spongy-soft, white, becoming cartridge-buff, somewhat granular, not waxy, cracked only rarely, the margin determinate, thick, with hyphae interwoven; in section 600–700  $\mu$  thick, grayish olive near the substratum, stratose, each stratum composed of slightly colored, thin-walled, suberect, curving and branching hyphae  $\frac{1}{2}-1 \mu$  in diameter, and of scattered, conspicuous, rather thick-walled, globose vesicular bodies 12–13  $\mu$  in diameter; no other gloecystidia; no cystidia; spores hyaline, even,  $3 \times 2 \mu$ .

Largest fragments of fructifications are 3 cm. in diameter and 4 cm. long, 2 cm. wide.

On rotten frondose wood. West Indies. November. Probably local.

*C. globosum* forms thick, pulvinate fructifications suggestive in

aspect of those of resupinate *Stereum Murrayi* but soft and spongy when moistened. The abundant, slender, curving hyphae show structural relationship with *Corticium investiens* and *Hypohchnus pallescens*, but I find no antler-shaped branches either at the hymenial surface or in the interior. The globose vesicular bodies are conspicuous and a valuable distinctive character.

Specimens examined:

Cuba: Omaja, *C. J. Humphrey*, 2842.

Porto Rico: Rio Piedras, *J. A. Stevenson*, 5793, type (in Mo. Bot. Gard. Herb., 54690), and *J. A. Stevenson & R. C. Rose*, 6531 (in Mo. Bot. Gard. Herb., 55652).

**76. *C. subalbum* Burt, n. sp.**

Type: in N. Y. Bot. Gard. Herb., Mo. Bot. Gard. Herb., and Burt Herb.

Fructifications effused, very thin, closely adnate, whitish to cartridge-buff in the herbarium, even, not shining, but little cracked, the margin similar, thinning out; in section 75  $\mu$  thick, not colored, composed of densely interwoven hyphae about 2  $\mu$  in diameter, and of very numerous gloeocystidia which are broadly ovoid to subglobose, up to  $30 \times 15-18 \mu$ , or 20  $\mu$  in diameter; very slender paraphyses with branched tips protrude slightly beyond the basidia; spores hyaline, even,  $10\frac{1}{2}-13 \times 4-5 \mu$ , copious.

Fructifications 3-5 mm. in diameter, clustered near together and becoming confluent in a mass 5 cm. long,  $1\frac{1}{2}$  cm. wide.

On small dead limbs of *Alnus*. Georgia and Alabama. November.

*C. subalbum* is distinct from other gloeocystidial species by thin, whitish fructifications, rather large spores, abundant gloeocystidia, and the slender paraphyses.

Specimens examined:

Georgia: Atlanta, *E. Bartholomew*, 8983 (in Mo. Bot. Gard. Herb., 63462).

Alabama: Auburn, *F. S. Earle*, 2300, type (in N. Y. Bot. Gard. Herb., Mo. Bot. Gard. Herb., 63375, and Burt Herb.).

**77. *C. vinososcabens* Burt, n. sp.**

Type: in Burt Herb.

Fructifications broadly effused, adnate, rather thick, membranaceous, separable when moistened, vinaceous-buff or pale avellaneous when fresh, becoming deep purplish vinaceous where bruised, finally between pale olive-buff and pale pinkish buff in the herbarium, even, waxy, not cracking, the margin whitish, fimbriate; in section 150–450  $\mu$  thick, pale-colored, with a compact hymenial layer containing numerous thin-walled, vesicular bodies 15–75  $\times$  12–45  $\mu$ , and with a very broad supporting layer consisting of thin-walled, nodose-septate hyphae 2–3  $\mu$  in diameter, not incrustated and loosely arranged except in thick fructifications where 1 or 2 dense narrow zones are present between substratum and hymenial layer; basidia 2-spored; spores white in spore collection, even, subglobose, 6–9  $\times$  5–7  $\mu$ , slightly pointed at the base.

Fructifications 3–9 cm. long, 1½–3 cm. wide.

On bark of fallen trunk of *Abies rubra* and *Tsuga canadensis*. Vermont to Wisconsin. September and November. Rare.

*C. vinososcabens* dries a characteristic livid color, occurs on bark of conifers, and has large subglobose spores and a vesiculose hymenial layer. These vesicular organs are presumably gloeocystidia but so highly inflated that they appear empty under the microscope, and with their scanty cell contents adhering to the cell wall.

Specimens examined:

Vermont: Little Notch, Ripton, *E. A. Burt*, type.

New York, Karner, *H. D. House*, 14,210 (in Mo. Bot. Gard. Herb., 44730).

Wisconsin: Ladysmith, *C. J. Humphrey*, 1773 (in Mo. Bot. Gard. Herb., 14242).

78. *C. polygonium* Persoon, Roemer Neues Mag. Bot. 1: 110. 1794; Fries, Epicr. 564. 1838; Hym. Eur. 655. 1874; Berkeley, Outl. Brit. Fung. 276. 1860; Sacc. Syll. Fung. 6: 627. 1888; Masee, Linn. Soc. Bot. Jour. 27: 144. 1890; Bresadola, Ann. Myc. 1: 97. 1903; Rea, Brit. Basid. 684. 1922.

*Thelephora polygonia* Persoon, Syn. Fung. 574. 1801; Myc. Eur. 1: 132. 1822; Fries, Syst. Myc. 1: 444. 1821; Elench. Fung. 1: 222. 1828.—*Gloeocystidium polygonium* (Pers.) v. Höhnelt & Litschauer, Wiesner Festschr. Wien, 69. 1908;

Bourdot & Galzin, Soc. Myc. Fr. Bul. 28: 363. 1913.—*G. polygonium* (Pers.) var. *fulvescens* Bresadola, Mycologia 17: 69. 1925.

Fructifications orbicular, soon confluent and broadly effused, closely adnate, thin, pale ecru-drab to brownish drab, pruinose, even or somewhat tubercular, waxy, the margin whitish; in section 150–250  $\mu$  thick, not colored, composed of suberect, interwoven hyphae 3–5  $\mu$  in diameter, occasionally nodose-septate, and of pyriform gloeocystidia 10–25  $\times$  5–20  $\mu$ ; spores hyaline, even, cylindric, slightly curved,  $7\frac{1}{2}$ –10  $\times$   $2\frac{1}{2}$ –3  $\mu$ .

Fructifications 3–5 mm. in diameter, becoming by confluence up to 8 cm. long, 1–2 cm. wide.

On fallen branches of *Populus*. In Europe and in Colorado, Idaho, Manitoba, and Washington.

American specimens of *C. polygonium* are not as heavily pruinose as the European specimens which I have seen and may be recognized by the light grayish vinaceous color of the fructifications, occurrence on poplar bark, large, scattered gloeocystidia, and slender, cylindric spores.

Specimens examined:

Exsiccati: Cooke, Fungi Brit., 6; Romell, Fungi Scand., 128.

Sweden: Stockholm, L. Romell, 118, 119, and in Romell, Fungi Scand., 128, and W. A. Murrill, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 61477); Svex, Söderm., Lindblad, from E. Fries (in Kew Herb.).

Germany: Brinkmann, comm. by Bresadola.

Austria: Tirol, V. Litschauer.

England: Batheaston, C. E. B., in Cooke, Fungi Brit., 6.

Colorado: Geneva Creek Canyon, F. J. Seaver & E. Bethel (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61474); Lake Eldora, F. J. Seaver & E. Bethel (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 56793).

Idaho: J. R. Weir, 16824, type of *Gloeocystidium polygonium* var. *fulvescens* (in Weir Herb.); Coolin, J. R. Weir, 11551 (in Mo. Bot. Gard. Herb., 63703); Priest River, J. R. Weir, 14946 (in Mo. Bot. Gard. Herb., 56803).

Manitoba: I. L. Conners & J. F. Higham, comm. by G. R. Bisby, 394 (in Mo. Bot. Gard. Herb., 58969).

Washington: Bingen, W. N. Suksdorf, 719, 902.

79. *C. chrysocreas* Berk. & Curtis, *Grevillea* 1: 178. 1873; Sacc. Syll. Fung. 6: 618. 1888.

*Corticium crocicreas* Massee, Linn. Soc. Bot. Jour. 27: 151. 1890; v. Höhnelt & Litschauer, K. Akad. Wiss. Wien Sitzungsber. 116: 776. 1907.—Not *C. crocicreas* Berk. & Curtis.

Type: type distribution in Ravenel, *Fungi Car.* 5: 27, under the name *Corticium crocicreas*.

Fructifications broadly effused, rather thick, closely adnate, not at all separable, apricot-yellow and olive-ocher to dark olive-buff, even or becoming somewhat papillate, cracked in drying, the margin thinning out, indeterminate; in section 120–300  $\mu$  thick, olive-ocher throughout, composed of erect, densely interwoven and conglutinate colored hyphae about 2  $\mu$  in diameter, of very numerous vesicular organs 15–21  $\times$  6–9  $\mu$ ; coloring matter of the sections becomes vinaceous upon treatment with potassium hydrate solution and the sections are finally bleached; spores white in a spore collection, even,  $4\frac{1}{2}$ –5  $\times$   $2\frac{1}{2}$   $\mu$ .

Fructifications 3–8 cm. long, 1–3 cm. wide.

On wood and bark of decaying logs of frondose species. South Carolina to Louisiana and Missouri, in Mexico, in West Indies, and in Japan. July to April. Occasional.

*C. chrysocreas* has olive-ocher fructifications of the same color throughout which make it one of the most conspicuous species of the region bordering on the Gulf of Mexico. Several other Gulf species have a northern station in Missouri or Illinois. The vesicular structure in section is an important distinctive character for separation of this species from *Odontia Wrightii*, which has the same color and geographical range but angular granules in the hymenium.

Specimens examined:

Exsiccati: Ell. & Ev., N. Am. Fungi, 2021, under the name *Corticium crocicreas*—in some copies this, and in others a different species; Ravenel, *Fungi Car.* 5: 27, under the name *C. crocicreas*. South Carolina: H. W. Ravenel, Curtis Herb., 2933, type (in Kew Herb.) and in Ravenel, *Fungi Car.* 5: 27.

Florida: W. W. Calkins, in some copies of Ell. & Ev., N. Am. Fungi, 2021; New Smyrna, C. G. Lloyd, 2072.

Alabama: Peters, 418 (under the name *C. crocicreas* in Curtis Herb., 4027).

Mississippi: Hattiesburg, *C. J. Humphrey*, 5454.

Louisiana: Baton Rouge, *Edgerton & Humphrey*, comm. by C. J. Humphrey, 5601; St. Martinville, *A. B. Langlois*, *bm*, *H.* 2612, and 35—the last comm. by Lloyd Herb., 2386—and 1950a, comm. by W. G. Farlow (in *Mo. Bot. Gard. Herb.*, 42601).

Missouri: Creve Coeur, *E. A. Burt* (in *Mo. Bot. Gard. Herb.*, 1757, 14199).

Mexico: Jalapa, *W. A. & E. L. Merrill*, 180, comm. by N. Y. Bot. Gard. Herb. (in *Mo. Bot. Gard. Herb.*, 44968).

Cuba: Baracoa, *L. M. Underwood & F. S. Earle*, 1210, comm. by N. Y. Bot. Gard. Herb.

Japan: Hida-Machi, Prov. Bungo, *N. Nakayama*, comm. by A. Yasuda, 96, under the name *Corticium Nakayamae* Yasuda.

**80. *C. involucrum* Burt, n. sp.**

Type: in Burt Herb.

Fructifications broadly effused, closely adnate, thin, somewhat gelatinous, not at all separable, drying olive-buff to snuff-brown, even, conforming to inequalities of the substratum, pruinose, not cracked except where bridging a depression, the margin indeterminate, thinning out; in section 60–80  $\mu$  thick when composed of 1 stratum, 120–150  $\mu$  when 2 strata are present, colored like the hymenium by the color of the numerous gloeocystidia, each stratum composed of erect, densely arranged hyphae and gloeocystidia; hyphae 3  $\mu$  in diameter, with outer wall somewhat gelatinously modified, clothed with short lateral branches up to 6  $\mu$  long which are clustered in an involucre cup at the base of the basidium; gloeocystidia brownish-colored, irregular, flexuous, 30–45  $\times$  4–4½  $\mu$ , very numerous; basidia simple, bearing 4 spores; spores hyaline, even, spherical, 3–4  $\mu$  in diameter.

Fructifications 2–10 cm. long, 1–3 cm. wide.

Under side of decorticated, decaying logs of frondose species usually—one gathering on coniferous wood. Canada, New Hampshire, Vermont, and Cuba. September to December.

*C. involucrum* forms a thin brown coating on decaying wood, with aspect somewhat suggestive of a *Sebacina* or *C. lividum* but so near the color of the wood and so inconspicuous that it is probably often overlooked; the colored gloeocystidia are addi-

tional confirmatory characters which should identify the species. The hyphal structure is unique but not likely to be observed unless close study is made.

Specimens examined:

Canada: Ottawa, *J. Macoun*, 4, 23.

New Hampshire: Chocorua, *W. G. Farlow*, 7.

Vermont: Middlebury, *E. A. Burt*, type.

Cuba: Ceballos, *C. J. Humphrey*, 2793 (in Mo. Bot. Gard. Herb., 20200).

81. *C. luridum* Bresadola, *Fungi Trid.* 2: 59. *pl.* 169. 1898; *Sacc. Syll. Fung.* 16: 119. 1902.

*Gloeocystidium luridum* (Bres.) v. Höhnelt & Litschauer, *K. Akad. Wiss. Wien Sitzungsber.* 116: 770. 1907; Bourdot & Galzin, *Soc. Myc. Fr. Bul.* 28: 360. 1913.

Type: part of type in Burt Herb.

Fructifications broadly effused, adnate, sometimes rather thick, small pieces separable when moistened, becoming cinnamon-buff to avellaneous in the herbarium, not shining, even, sometimes somewhat cracked with age, the margin similar; in section 150–300  $\mu$  thick, slightly colored, composed of densely arranged hyphae 2–3½  $\mu$  in diameter and not incrustated, which run parallel with the substratum in a narrow layer and then become erect and mixed with gloeocystidia in a broad layer which bears the hymenium; gloeocystidia numerous, slightly colored, flexuous, 50–100  $\times$  6–7  $\mu$ ; spores hyaline, even, 6–8  $\times$  3–5  $\mu$ .

Fructifications 3–4 cm. long, 1–4 cm. wide and broken off at both ends in the fragments received.

On bark and wood of frondose species. In Europe, Ohio, and Manitoba. Autumn. Rare.

*C. luridum* may be recognized among our species by its slightly colored gloeocystidia and resemblance in general aspect and color to *Peniophora velutina*. The spores were published by Bresadola as 10–17  $\times$  6–8  $\mu$  but I have found none so large in the specimen received.

Specimens examined:

Italy: Florentia, *Martelli*, type, from Bresadola.

Ohio: Preston, *C. G. Lloyd*, 1558.

Manitoba: Winnipeg: A. H. R. Buller, 744 (in Mo. Bot. Gard. Herb., 57913).

82. *C. jamaicense* Burt, n. sp.

Type: in Burt Herb.

Fructifications broadly effused, adnate, thick, somewhat membranaceous, small pieces separable when moistened, becoming buff-brown to tawny olive in the herbarium, even, pulverulent, not cracked, the margin probably thick and entire but not well shown by the fragments; in section 150–600  $\mu$  thick, concolorous with the hymenium, composed of even, suberect hyphae 3  $\mu$  in diameter, of interwoven organs 2  $\mu$  in diameter with antler-shaped branching, of colored gloecystidia, and of imbedded, globose, slightly colored, rough-walled spores 6–7  $\mu$  in diameter, very numerous in all regions; gloecystidia becoming dark-colored, irregular, flexuous, 35–60  $\times$  5–7  $\mu$ , scattered throughout the fructifications, none found protruding; basidia simple, with 4 sterigmata; basidiospores spherical, hyaline, even, 6  $\mu$  in diameter as seen attached to basidia.

Fructifications received in fragments, of which the largest is 7 cm. long, 2 cm. wide.

On decaying wood. Jamaica. December to January.

The general aspect and antler-shaped branching of one kind of its hyphal components show relationship to *Hypochnus peniophoroides*, *H. pallescens*, *Stereum induratum*, *S. duriusculum*, *Asterostromella dura*, and *A. rhodospora*. Could I have found uneven basidiospores this species would have been included in *Hypochnus* near *H. pallescens* and *H. peniophoroides*; such basidiospores may eventually be demonstrated when this species becomes better known.

Specimens examined:

Jamaica: Cinchona, W. A. & E. L. Murrill, 456, type, comm. by N. Y. Bot. Gard. Herb.; Morce's Gap, W. A. & E. L. Murrill, 677, 740, comm. by N. Y. Bot. Gard. Herb.

83. *C. debile* Berk. & Curtis in Masee, Linn. Soc. Bot. Jour. 27: 131. 1890; Sacc. Syll. Fung. 11: 127. 1895.

Type: in Kew Herb. and Farlow Herb.

Fructifications broadly effused, thin, closely adnate, becoming pale ivory-yellow to buffy brown in the herbarium, even, waxy, not cracked, the margin whitish; in section  $150\ \mu$  thick, yellowish by presence of numerous colored gloeocystidia, with the hyphae about  $2\frac{1}{2}$ – $3\ \mu$  in diameter, with walls gelatinously modified and poorly defined, longitudinally arranged along substratum and then ascending to the hymenium; gloeocystidia somewhat colored, flexuous,  $30$ – $60 \times 3$ – $5\ \mu$ ; some colorless vesicular bodies present also; spores hyaline, even, subglobose,  $4$ – $5\ \mu$  in diameter in Burt preparation but noted by Massee as  $7 \times 3$ – $4\ \mu$ .

Fructifications 1–3 cm. in diameter.

Under side of decaying frondose limbs on the ground. Louisiana, California, West Indies, and Venezuela. June and December. Rare.

*C. debile* has gloeocystidia which are numerous and conspicuous by their yellowish color; these gloeocystidia and the brown fructifications afford good distinguishing characters.

Specimens examined:

Louisiana: St. Martinville, A. B. Langlois, bb, 2674 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 58327).

California: Preston's Ravine, Palo Alto, W. A. Murrill & L. S. Abrams, 1195, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 55709).

Cuba: near Havana, C. J. Humphrey, 2963.

Porto Rico: Bayamon, J. A. Stevenson, 6762 (in Mo. Bot. Gard. Herb., 55053); Rio Piedras, J. A. Stevenson, 5620, and J. A. Stevenson & R. C. Rose, 6529 (in Mo. Bot. Gard. Herb., 44864, 55082); Martin Peña, J. A. Stevenson, 3719 (in Mo. Bot. Gard. Herb., 7091).

Jamaica: Constant Spring Hotel grounds, W. A. & E. L. Murrill, 26, comm. by N. Y. Bot. Gard. Herb.

Venezuela: Fendler, type (in Curtis Herb., 204).

84. *C. venosum* Berk. & Ravenel, *Grevillea* 1: 177. 1873; Sacc. Syll. Fung. 6: 620. 1888; Massee, Linn. Soc. Bot. Jour. 27: 147. 1890.

Type: in Kew Herb. and Farlow Herb.

Fructifications broadly effused, rather thick, waxy-gelatinous

when moistened, becoming vinaceous-brown in the herbarium, even; in section 500–600  $\mu$  thick, with a layer 300  $\mu$  broad towards the substratum composed of longitudinally and densely arranged hyphae, with the outer walls so gelatinously modified that only the stained lumen and contents of each hypha are now visible as to outline; hymenial portion zonate, composed of 2 layers, each containing numerous curved, slender, flexuous, deeply staining organs 30–75  $\times$  3–4  $\mu$ , which may be elongated gloeocystidia or perhaps basidia of the transversely septate kind; a few scattered, brownish spherical organs resembling gloeocystidia of *Peniophora serialis*; spores hyaline, even, 12–13  $\times$  4–5  $\mu$ , few seen and may not belong.

On decaying logs. South Carolina.

In the original description it was stated that there is a thin, tomentose subiculum composed of interwoven threads. If so, it is not retained in my mounts of sections from the specimens in Kew and Farlow Herbaria made 26 and 24 years ago respectively. I did not decide from the type specimens whether this species is a *Corticium* or *Stereum* having elongated gloeocystidia or an *Auricularia* with transversely septate basidia. I noted the presence of the word "*Auricularia*" on the specimen in Kew Herbarium but the species was published as a *Corticium*. My thin *Corticium argentatum* is of too different structure to be a synonym of this. While writing this account it occurs to me that the specimens distributed in Ellis, N. Am. Fungi, 1109, under the name *Phlebia spilomea*, should have been compared with a type of *C. venosum*.

Specimens examined:

South Carolina: Black Oak, *H. W. Ravenel*, 1321, type (in Kew Herb. and in Farlow Herb.).

85. *C. ochrofarctum* Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructifications effused, closely adnate, very thin, hypochnoid, tilleul-buff in the herbarium, even, not shining, not cracked, the margin whitish, thinning out, with hyphae interwoven; in section 100–150  $\mu$  thick, not colored, composed of hyphae and numerous scattered, spherical, ochraceous gloeocystidia; hyphae rather

- Gloeocystidia

loosely arranged near the substratum, suberect, incrusting,  $4\frac{1}{2}$   $\mu$  in diameter under the incrustation and up to 6  $\mu$  over it, not incrusting and more densely arranged towards the hymenium; gloecystidia in the form of brown or ochraceous, resinous, spherical or somewhat angular masses 9–20  $\mu$  in diameter; spores white in a spore collection, even, cylindric, somewhat curved,  $8 \times 2\frac{1}{2}$   $\mu$ .

Fructifications 2–6 cm. long, 5 mm.–3 cm. wide.

On decorticated, very rotten logs of *Populus trichocarpa*. Idaho. September.

The specific name *ochrofarctum* has reference to the colored, resinous gloecystidia which are so large and so deep colored that they may be seen by inspection of the fructification with a lens and give, when so viewed, a minutely speckled appearance to the fructification. The large, coarsely incrusting hyphae are distinctive also. *C. coroniferum* is a related European species.

Specimens examined:

Idaho: Coolin, J. R. Weir, 11120, type, and 11122 (in Mo. Bot. Gard. Herb., 63695 and 63696 respectively).

86. *C. Tsugae* Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructifications effused, thin, dry, hypochnoid, downy, avel-laneous, with the surface white-pruinose, even, not cracked, the margin similar, indeterminate; in section 30  $\mu$  thick, not colored, composed of hyphae and numerous colored gloecystidia; hyphae hyaline, thin-walled, 3  $\mu$  in diameter, not incrusting, not nodose-septate, ascending from the substratum; gloecystidia in the form of brown or ochraceous, resinous-appearing, subspherical masses up to 18  $\mu$  in diameter; not more than 4 sterigmata to a basidium demonstrated; spores hyaline, even,  $6-7\frac{1}{2} \times 3-3\frac{1}{2}$   $\mu$ , copious.

Fructifications in fragments up to  $2\frac{1}{2}$  cm. long,  $1\frac{1}{2}$  cm. wide.

On very rotten wood of *Tsuga canadensis*. New Hampshire. September.

The color of the fructification of this species is so nearly that of the rotten substratum that close inspection is necessary to detect the presence of the fungus, whose color is probably due to the

gloeocystidia. This aspect, together with uncommon gloeocystidia and non-incrusted hyphae, are good distinctive characters.

Specimens examined:

New Hampshire: Chocorua, *W. G. Farlow*, 148, type (in Mo. Bot. Gard. Herb., 55248).

87. *C. subcinereum* Burt, n. sp. *Type = C. cinereum*

Type: in Burt Herb.

Fructifications long-effused, closely adnate, thin, not at all separable, pale gull-gray to pale drab-gray, slightly granular, somewhat pruinose, becoming cracked in drying, the margin similar or paler, thinning out; in section 60–100  $\mu$  thick, slightly colored, with the hyphae densely interwoven, 1–2  $\mu$  in diameter, so grown together as to show structure indistinctly, but probably not nodose-septate nor incrusted; no cystidia nor gloeocystidia; branched paraphyses about 1  $\mu$  in diameter are present in the hymenium; spores hyaline, even,  $5-8 \times 3-3\frac{1}{2} \mu$ .

Fructifications 2–10 cm. long, 1–2 cm. wide.

On bark of fallen, decaying limbs of *Betula*, *Cornus*, and *Syringa*. Canada, Massachusetts, and Kansas. February to October. Local.

*C. subcinereum* closely resembles *Peniophora cinerea*, *P. caesia*, and *C. argentea* in aspect but is distinct from each by its lack of cystidia and gloeocystidia.

Specimens examined:

Canada: Ottawa, *J. Macoun*, 37, type.

Massachusetts: Sharon, *A. P. D. Piguet*, comm. by *W. G. Farlow*, 8 (in Mo. Bot. Gard. Herb., 55289).

Kansas: Rockport, *E. Bartholomew*; Rooks County, comm. by *Lloyd Herb.*, 2301; Stockton, *E. Bartholomew*, 8620, 8702 (in Mo. Bot. Gard. Herb., 62491, 63749, and Burt Herb.).

88. *C. albido-carneum* (Schw.) Masee, Linn. Soc. Bot. Jour. 27: 142. 1890.

*Thelephora albido-carnea* Schweinitz, Am. Phil. Soc. Trans. N. S. 4: 169. 1832.—*Corticium albido-carneum* (Schw.) Ravenel, Fungi Car. 4: 14, was a misdetermination by Ravenel.

Type: in Schweinitz Herb., Farlow Herb., and Kew Herb.

Fructifications effused, small, becoming confluent longitudinally but very narrow, closely adnate, thin, becoming pale drab-gray to pinkish buff in the herbarium, pruinose, cracking transversely in drying, the margin paler; in section 60–120  $\mu$  thick, composed of 3 equal layers, of which that next to substratum consists of densely, longitudinally interwoven, slightly colored hyphae  $1\frac{1}{2}$ –2  $\mu$  in diameter, not incrustated nor nodose-septate; the middle layer contains numerous pyriform bodies  $12 \times 6 \mu$  which are presumably basidia; the outer layer is composed of bushy-branched paraphyses 3  $\mu$  in diameter with final branchlets and lateral prongs about  $\frac{1}{2} \mu$  in diameter; detached spores  $5\text{--}8 \times 3\text{--}4 \mu$ , few present and may not belong.

Fructifications 6–10 mm. long, 1–2 mm. wide, becoming more or less confluent over areas up to 5 cm. long and 3 cm. wide.

In crevices of the bark of dead wood of wild species of *Vitis*. Pennsylvania, Virginia, and Michigan. February and May. Rare.

*C. albido-carneum* is a very rare species which has been collected but few times and in small quantity for critical study. The specimens seem immature and the tissues of the fructifications are so minute and the covering of paraphyses so troublesome that I have been unable to make out the detailed structure of the basidia. The plan of structure is suggestive of a *Sebacina* but I have been unable to demonstrate longitudinal septa in any of the pyriform organs. The somewhat smoky color of the sections, their 3-layered structure, and occurrence on bark of dead wild grape trunks are a combination of characters which should afford ready recognition of this species. The dates of collection of the specimens seem to indicate that the species may fruit in winter. If some of the pyriform organs are gloeocystidia, *C. pilosum* may prove not specifically distinct.

Specimens examined:

Pennsylvania: Bethlehem, *Schweinitz*, type (in Schweinitz Herb., Kew Herb., and Farlow Herb.).

Virginia: Arlington Farm, *C. L. Shear*, 2810 (in Mo. Bot. Gard. Herb., 15310).

Michigan: Paw Paw, *L. A. Hawkins*, comm. by C. L. Shear.

**89. *C. adhaesum* Burt, n. sp.**

Type: in Mo. Bot. Gard. Herb.

Fructifications effused, closely adnate, rather thick, not separable, between drab and deep olive-buff, somewhat granular, pulverulent, cracked at intervals of 1–2 mm., the margin abrupt; in section 250–350  $\mu$  thick, chamois-colored within, composed of densely arranged, thick-walled, erect and interwoven hyphae 3–3½  $\mu$  in diameter, not incrustated, not nodose-septate, conglutinate and not showing structure well; no gloeocystidia; spores hyaline, even, flattened on one side, 3½–6  $\times$  2½–3  $\mu$ , copious.

Fructifications 6 cm. long, 2 cm. wide.

On rough surface of badly decayed wood of a frondose species. Mexico and West Indies. Probably rare.

*C. adhaesum* is separated from the most of our species by having its fructifications colored within to such a degree that the thin sections are somewhat chamois-colored. The drab color of the hymenium and gluing together of the hyphae in sections are other distinctive characters.

Specimens examined:

Mexico: Jalapa, *W. A. & E. L. Merrill*, 64, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 16479).

Porto Rico: Rio Piedras, *J. A. Stevenson*, 5577 (in Mo. Bot. Gard. Herb., 11059).

Jamaica: *A. E. Wight*, comm. by W. G. Farlow, C 1, type (in Mo. Bot. Gard. Herb., 44005).

Trinidad: Port of Spain, *R. Thaxter*, comm. by W. G. Farlow, 22.

Grenada: Grand Etang, *R. Thaxter*, comm. by W. G. Farlow, 121.

**90. *C. leptaleum* Ell. & Ev. in Millsp. & Nutt. Field Mus. Publ. Bot. 1: 170. 1896; Sacc. Syll. Fung. 14: 220. 1899.**

Type: in N. Y. Bot. Gard. Herb.

Fructifications effused, adnate, membranaceous-soft, contracting in drying so that only one-half the original area is covered, cracking into masses 2–3 mm. in diameter and curling up from substratum so as to resemble cups of a *Peziza*, grayish white, becoming pinkish buff in the herbarium, pulverulent; in section 300  $\mu$  thick, composed of densely interwoven hyphae 3–3½  $\mu$  in diameter, incrustated in the subhymenium, only rarely nodose-septate; no gloeocystidia; spores hyaline, even, 8–10  $\times$  3–4  $\mu$ .

On under side of dead *Magnolia Fraseri*. West Virginia. April.

In the original description it is stated, "The membrane on which the hymenium stands where exposed on the incurved margin of the pezizoid areas is pale brown." Some twenty years ago at the time my sections of the type were made, I did not record whether the sections were colored within or not. They are now colorless but may have faded. The large spores preclude reference to *C. hydnans*.

Specimens examined:

West Virginia: *L. W. Nuttall*, 690, type (in N. Y. Bot. Gard. Herb.).

91. *C. laeve* Persoon, Roemer Neues Mag. Bot. 1: 110. 1794; Sacc. Syll. Fung. 6: 611. 1888; Bresadola, Ann. Myc. 1: 94. 1903; Bourdot & Galzin, Soc. Myc. Fr. Bul. 27: 232. 1911; Rea, Brit. Basid. 673. 1922.

*Thelephora laevis* Persoon, Syn. Fung. 575. 1801 (under *Corticium*); Myc. Eur. 1: 130. 1822.—*T. evolvens* Fries, Obs. Myc. 1: 254. pl. 4, f. 5. 1815; Syst. Myc. 1: 441. 1821; Elench. Fung. 1: 181. 1828.—*Corticium evolvens* Fries, Epicr. 557. 1838; Hym. Eur. 646. 1874; Sacc. Syll. Fung. 6: 604. 1888; Masee, Linn. Soc. Bot. Jour. 27: 118. pl. 6, f. 4. 1890.—Not *Corticium laeve* Fries, which is a *Peniophora*.

Type: in Herb. Mougeot, according to Bresadola in letter. Fragment of type from Quelet to Bresadola in Burt Herb.

Fructifications usually widely effused, rarely small and disk-shaped, very rarely slightly reflexed, thick, membranaceous, tender, small pieces separable when moist, becoming cream color and light pinkish cinnamon to wood-brown and drab in the herbarium, waxy, even, more or less undulate, sometimes coarsely tuberculate, cracking in drying and showing on the sides of the fissures a thick, crust-like hymenial layer of about the same color as the surface of the hymenium and connected with the substratum by a thicker layer of whitish floccose or loose tissue, the margin white, silky, radiating, but sometimes free when the fructifications are pezizaeform and 1–3 mm. in diameter; in section 200–500  $\mu$  thick, 2-layered, with the hymenial layer usually

somewhat colored but concolorous with the surface of the hymenium, very compact, supported by the broad layer of loosely arranged, obliquely ascending, thin-walled hyphae  $3-4\ \mu$  in diameter, sometimes conspicuously guttulate, nodose-septate, not incrustated; no gloeocystidia; spores hyaline, even,  $7-10 \times 4-6\ \mu$ , flattened on one side, tapering towards the pointed base, usually glued together on the flattened side at ends of the protruding basidia.

Fructifications 1-10 cm. long, 1-5 cm. wide, rarely only 1-3 mm. in diameter.

On bark of fallen decaying limbs of many frondose species. Europe and northern United States and Canada. Throughout the year. Very common.

*C. laeve* is a very common species on fallen limbs of poplar, maple, beech, etc., whose usually drab fructifications crack when dried and show the dark hymenial crust supported on a whitish subiculum. The absence of paraphyses and presence of spores  $7-10 \times 4-6\ \mu$ , shaped like apple seeds and glued together in groups of 2-4, are important additional characters. In the large number of gatherings cited below there are only 2 American specimens which have a slightly reflexed margin and would be referred to *Stereum*, where the species really belongs.

Specimens examined:

Exsiccati: Brinkmann, Westfälische Pilze, 9; Cooke, Fungi Brit., 10; Ell. & Ev., Fungi Col., 221, under the name *Corticium glabrum*; Libert, Pl. Crypt. Ard., 20; Romell, Fungi Scand., 124; Sydow, Myc. Germ., 355, under the name *Peniophora laevis*; de Thümen, Myc. Univ., 1109.

Sweden: Svex. Söderm., Lindblad, authentic specimen of *C. evolvens* from Fries (in Kew Herb.); Stockholm, L. Romell, 89, 90, 91, 92, 93, 94, 95, and in Romell, Fungi Scand., 124.

Finland: Mustiala, P. A. Karsten, in de Thümen, Myc. Univ., 1109.

Germany: Brandenburg, H. Sydow, in Sydow, Myc. Germ., 355; Westphalia, W. Brinkmann, in Brinkmann, Westfälische Pilze, 9.

Austria: Innsbruck, Tirol, V. Litschauer, 3 specimens.

Italy: Trient, G. Bresadola, 3 specimens; Vallambrosa, Cavara, comm. by Bresadola.

- France: *A. Libert*, in *Libert*, *Pl. Crypt. Ard.*, 20; Paris, *Persoon*, original specimen of *C. laeve*, comm. by Bresadola; Strassburg, *L. Maire*.
- England: *E. M. Wakefield* (in *Mo. Bot. Gard. Herb.*, 58691); Hampstead, in *Cooke*, *Fungi Brit.*, 10.
- Canada: Lower St. Lawrence Valley, *J. Macoun*, 17, 50.
- Ontario: Granton, *J. Dearness*, 1040 *E* (in *Mo. Bot. Gard. Herb.*, 23107); London, *J. Dearness*, 945 *h* (in *Mo. Bot. Gard. Herb.*, 14252).
- Newfoundland: Bay of Islands, *A. C. Waghorne*, 517, 1027.
- New Hampshire: Chocorua, *W. G. Farlow*, 2 (in *Mo. Bot. Gard. Herb.*, 44594).
- Vermont: Middlebury, *E. A. Burt*, 5 gatherings, Ripton, *E. A. Burt*, 4 gatherings.
- New York: Adirondack Mts., *G. F. Atkinson*, *C*; Albany, *H. D. House* (in *N. Y. State Mus. Herb.*, and *Mo. Bot. Gard. Herb.*, 14829, 19456); Alcove, *C. L. Shear*, 1210, 1214; Altamont, *E. A. Burt*; Bronx Park, *Class in Mycology* (in *N. Y. Bot. Gard. Herb.*, and *Mo. Bot. Gard. Herb.*, 61389); Hague, *C. H. Peck* (in *N. Y. State Mus. Herb.*, and *Mo. Bot. Gard. Herb.*, 56110), and 13; Ithaca, *C. O. Smith*, comm. by *G. F. Atkinson*, 8046, and *G. F. Atkinson*, *d*, 2813, 4899; Lyndonville, *C. E. Fairman*, 138 (in *Mo. Bot. Gard. Herb.*, 61438); New York, *F. S. Earle* (in *N. Y. Bot. Gard. Herb.*, and *Mo. Bot. Gard. Herb.*, 61677); Newcomb, *H. D. House* (in *N. Y. State Mus. Herb.*, and *Mo. Bot. Gard. Herb.*, 59666); Oneida, *H. D. House* (in *N. Y. State Mus. Herb.*, and *Mo. Bot. Gard. Herb.*, 59679, 59699); Sylvan Beach, *H. D. House* (in *N. Y. State Mus. Herb.*, and *Mo. Bot. Gard. Herb.*, 7461); Syracuse, *L. M. Underwood*, 51, 126 (in *N. Y. Bot. Gard. Herb.*, and *Mo. Bot. Gard. Herb.*, 61571, 61394), and in *Ell. & Ev.*, *Fungi Col.*, 221.
- District of Columbia: Takoma Park, *C. L. Shear*, 1038.
- Michigan: Michigan Agricultural College, *B. O. Longyear*, 9 (in *N. Y. State Mus. Herb.*, and *Mo. Bot. Gard. Herb.*, 55787).
- Missouri: St. Louis, *E. A. Burt* (in *Mo. Bot. Gard. Herb.*, 58334).
- British Columbia: Sidney, *J. Macoun*, 65, 77, 78 (in *Mo. Bot. Gard. Herb.*, 5743, 5753, 9778), and 35, 288, 319, 350, 424 (in *Macoun Herb.*); Squamish, *J. Macoun*, 318, 536 (in *Mo. Bot.*

Gard. Herb.); Victoria, *J. Macoun*, 577 (in Macoun Herb.); Vancouver Island, *J. Macoun*, 419 (in Mo. Bot. Gard. Herb., 55315), and comm. by *J. Dearness*, V 35 (in Mo. Bot. Gard. Herb., 19573).

Washington: Bingen, *W. N. Suksdorf*, 714, 755, 872, 886, 898, 899, 901, 955, 961; Olympia, *C. J. Humphrey*, 6293, 6330; Seattle, *A. M. Parker*, 177 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61475).

Oregon: Seattle, *W. A. Merrill*, 988, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 55703).

**92. *C. investiens*** (Schw.) Bresadola, I. R. Accad. Agiati Atti III. 3: 110. 1897; Ann. Myc. 1: 95. 1903.

*Radulum? investiens* Schweinitz, Am. Phil. Soc. Trans. N. S. 4: 165. 1832; Sacc. Syll. Fung. 11: 112. 1895.—*Vararia investiens* (Schw.) Karsten, Krit. Öfvers. Finl. Basidsv. Tilläg 3: 32. 1898.—*Asterostromella investiens* (Schw.) v. Höhnelt & Litschauer, K. Akad. Wiss. Wien Sitzungsber. 117: 1083. 1908.—*Corticium alutarium* Berk. & Curtis, Grevillea 2: 4. 1873; Sacc. Syll. Fung. 6: 634. 1888; Masee, Linn. Soc. Bot. Jour. 27: 137. 1890.—*Thelephora subochracea* Peck, N. Y. State Mus. Rept. 46: 109. 1893; Sacc. Syll. Fung. 11: 116. 1895.—*Xerocarpus alutarius* (Berk. & Curtis) Karsten, Finska Vet.-Soc. Bidrag Natur och Folk 48: 418. 1889.

Type: in Schweinitz Herb., Farlow Herb., Fries Herb., and probably in Kew Herb.

Fructifications broadly effused, usually thin, tough, dry, adnate, small pieces separable when moist, warm buff to light orange-yellow, conforming to inequalities of the substratum, somewhat tomentose, not cracked, the margin thinning out; in section 150–600  $\mu$  thick, concolorous with the hymenium, composed of a few even-walled, hyaline hyphae  $2\frac{1}{2}$   $\mu$  in diameter, and of a great number of yellowish, stiff hyphae with dichotomous and antler-shaped branching and short, acicular, prong-like terminal branchlets, which extend beyond the basidia in the hymenial surface; no gloeocystidia; basidia 4-spored; spores hyaline under the microscope but slightly straw-colored in the mass, even,  $12 \times 4$   $\mu$ , tapering downward to the slender, apiculate base.

Fructifications 2–20 cm. long, 1–5 cm. wide.

On rotten logs and fallen branches of both frondose and coniferous species and sometimes running over fallen leaves and the ground. In Europe, throughout North America, West Indies, Venezuela, and in Japan. July to December. Very common.

*C. investiens* is readily recognized by chamois color and surface texture like that of chamois leather. Under the microscope the antler-shaped branching of its principal hyphal component is well shown. This mode of hyphal branching seems to me a useful specific character for the various other species which have it, e. g., *Lachnocladium brasiliense*, *Grandinia granulosa*, *Stereum induratum*, *S. duriusculum*, *Hypochnus peniophoroides*, *H. pallescens*, *Peniophora phyllophila*, *P. piliseta*, *P. mexicana*, and *Corticium jamaicense* but not of greater importance than other hyphal modifications which are useful specific characters, hence I can not accept as helpful Karsten's genus *Vararia*, of which the type species is *Corticium investiens*, nor its synonym *Asterostromella* of v. Höhnelt & Litschauer.

Specimens examined:

Exsiccati: Ellis, N. Am. Fungi, 517.

Sweden: Femsjö, L. Romell, 157, and C. G. Lloyd, 09149 (in Mo. Bot. Gard. Herb., 55619).

Hungary: Kmet, comm. by Bresadola.

Canada: J. Macoun, 91.

Ontario: Niagara, J. Dearness, D586 (in Mo. Bot. Gard. Herb., 3727); Temagami, C. G. Lloyd, 07633 (in Mo. Bot. Gard. Herb., 55618).

Maine: Kittery Point, R. Thaxter & E. A. Burt.

New Hampshire: Chocorua, W. G. Farlow; Shelburne, W. G. Farlow.

Vermont: Grand View Mt., E. A. Burt, 2 gatherings; Lake Dunmore, E. A. Burt; Little Notch, E. A. Burt; Middlebury, E. A. Burt.

Massachusetts: Lincoln, A. B. Seymour, T40 (in Mo. Bot. Gard. Herb., 12955); Magnolia, W. G. Farlow (in Farlow Herb.).

New York: Albany, H. D. House (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 6324, 54358, 54359); Alcove, C. L. Shear, 1121, 1123, 1203, 1322; Arkville, W. A. Murrill (in N.

Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61361); East Galway, *E. A. Burt*; Floodwood, *E. A. Burt*, *C. H. Peck*, 4a; Fort Ann, *S. H. Burnham*, 25 (in Mo. Bot. Gard. Herb., 54495); Freeville, *G. F. Atkinson*, 2812; Gansevoort, *C. H. Peck* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 55974); Ithaca, *G. F. Atkinson*, 8200, 22758, 22763, 23278, and *C. J. Humphrey*, 548, 22563; Karner, *H. D. House*, 14.154, comm. by N. Y. State Mus. Herb. (in Mo. Bot. Gard. Herb., 44711); Lake Placid, *W. A. & E. L. Murrill*, 282 (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 61673); North Elba, *C. H. Kauffman*, 6 (in Mo. Bot. Gard. Herb., 21464); North Greenbush, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55783, 56109); Oneida, *H. D. House* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 57474, 59682); Onondaga Valley, *L. M. Underwood*, 11 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61580); Sandlake, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55779); Shokan, *C. H. Peck*, type of *Thelephora subochracea* (in N. Y. State Mus. Herb.); Snyners, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55780); Westport, *C. H. Peck*, 4.

Pennsylvania: *Michener*, type of *Corticium alutarium* (in Curtis Herb., 6349); Bethlehem, *Schweinitz*, type of *Radulum? investiens* (in Schweinitz Herb. and Farlow Herb.) and under the name *Thelephora ochracea* of Schweinitz (in Curtis Herb. from Schweinitz Herb.); Ohio Pyle, *W. A. Murrill*, 1047 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61553); State College, *L. O. Overholts* (in Mo. Bot. Gard. Herb., 54701); Trexlertown, *W. Herbst*, 33, 42; West Chester, *Everhart & Haines*, in Ell. N. Am. Fungi, 517; no locality given, *H. Jackson*, *Gentry* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55809, 55905, respectively).

Delaware: Newark, *H. S. Jackson*, B7.

District of Columbia: Takoma Park, *C. L. Shear*, 960.

Louisiana: St. Martinville, *C. J. Humphrey*, 2519 (in Mo. Bot. Gard. Herb., 42937).

West Virginia: Eglon, *C. G. Lloyd*, 1408 (in Mo. Bot. Gard. Herb., 55610); Nuttallburg, *L. W. Nuttall*, 189, comm. by U. S. Dept. Agr. Herb.; Paw Paw, *C. L. Shear*, 1172.

- Ohio: *C. G. Lloyd*, 4197 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61593); Cincinnati, *A. P. Morgan*, the *Corticium ochraceum* of Morgan Herb., comm. by Lloyd Herb., 2639.
- Indiana: Millers, *E. T. & S. A. Harper*, 830.
- Michigan: Ann Arbor, *C. H. Kauffman*, 41 (in Mo. Bot. Gard. Herb., 22930); Whitmore Lake, *A. H. W. Povah*, 10 (in Mo. Bot. Gard. Herb., 9228).
- Montana: Trego, *E. E. Hubert*, comm. by J. R. Weir, 12039 (in Mo. Bot. Gard. Herb., 63389).
- Idaho: Priest River, *J. R. Weir*, 38; *E. E. Hubert*, comm. by J. R. Weir, 11998 (in Mo. Bot. Gard. Herb., 63361).
- British Columbia: Sidney, *J. Macoun*, 14 (in Mo. Bot. Gard. Herb., 5732); Vancouver Island, *J. Macoun*, comm. by J. Dearness, V148 (in Mo. Bot. Gard. Herb., 21138).
- Mexico: Orizaba, Barrio Nuevo, *W. A. & E. L. Murrill*, 762, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54646).
- Jamaica: Castleton Gardens, *W. A. & E. L. Murrill*, 123 (in N. Y. Bot. Gard. Herb., Mo. Bot. Gard. Herb., 61365, and Burt Herb.); Cinchona, *W. A. & E. L. Murrill*, 648 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61458); Morces Gap, *W. A. & E. L. Murrill*, 734 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61466).
- Porto Rico: Rio Piedras, *J. A. Stevenson*, 3474 (in Mo. Bot. Gard. Herb., 6732).
- Venezuela: *Fendler* (in Curtis Herb., 190, under the herbarium name *Corticium xanthellum*).
- Japan: Nakada-mura, Prov. Awaji, *A. Yasuda*, 44 (in Mo. Bot. Gard. Herb., 56169).

**93. *C. pectinatum* Burt, n. sp.**

Type: in Mo. Bot. Gard. Herb. and Farlow Herb.

Fructifications broadly effused, thin, closely adnate, not separable, warm buff to wood-brown in the herbarium, cracking into polygonal masses about 2 to the mm., not shining, the margin unknown; in section 60–90  $\mu$  thick, concolorous with the hymenium, composed of densely interwoven, colorless or slightly colored hyphae about 1  $\mu$  in diameter, not incrusted, not nodose-

septate, and of comb-shaped or antler-shaped branching, slightly colored masses of about  $5-10\ \mu$  in diameter each and having many prongs; no gloecystidia; basidia  $6-12 \times 4-5\ \mu$ , immature, immersed in the antler-shaped paraphyses which form the surface of the hymenium; no spores found.

Fructification 1-6 cm. long,  $\frac{1}{2}-1\frac{1}{2}$  cm. wide.

On bark of dead frondose limbs. Florida and West Indies. October to March.

*C. pectinatum* has the general aspect and color of *C. scutellare* and structure of *C. investiens* but with much smaller and more delicate hyphae and antler-shaped organs than the latter.

Specimens examined:

Florida: Cocoanut Grove, *R. Thaxter*, 76, type (in Mo. Bot. Gard. Herb., 43898); Royal Palm Hammock, *W. A. Merrill*, 131, comm. by N. Y. Bot. Gard. Herb., 63762).

Cuba: Omaja, *C. J. Humphrey*, 2596 (in Mo. Bot. Gard. Herb., 8730).

**94. *C. racemosum* Burt, n. sp.**

Type: in Burt Herb.

Fructifications broadly effused, closely adnate, thin, dry, not separable, drying cream-buff, even, not shining, becoming transversely cracked in the central portions, the margin thinning out, indeterminate, concolorous; in section  $70-140\ \mu$  thick, colored cream-buff, composed of very densely arranged, erect, branching and interwoven hyphae  $2-2\frac{1}{2}\ \mu$  in diameter; no gloecystidia; paraphyses in hymenial surface with tips branched sometimes racemosely, sometimes in antler-shaped manner, often irregularly, these branches about  $\frac{1}{2}\ \mu$  in diameter; spores hyaline, even, flattened on one side,  $4-6 \times 2-3\ \mu$ .

Fructifications 2-12 cm. long, 1-4 cm. wide.

On bark and wood of decaying logs of *Thuja plicata*, *Larix occidentalis*, *Abies grandis*, and *Pseudotsuga taxifolia*. Idaho, British Columbia, and Washington. July to September.

The slender branched paraphyses of *C. racemosum* and lack of gloecystidia locate this species in the group with *C. Atkinsonii*, *C. albidocarneum*, *C. rubropallens*, and *C. rubrocanum*. The antler-shaped branching of occasional paraphyses connects this species

with the *C. investiens* group also. *Radulum Pini-canadense* Schw. should also be considered here.

Specimens examined:

Idaho: Priest River, *J. R. Weir*, 39, type, and 137 (in Mo. Bot. Gard. Herb., 9852).

British Columbia: Salmo, *J. R. Weir*, 465 (in Mo. Bot. Gard. Herb., 11777).

Washington: Stanwood, *C. J. Humphrey*, 7360 (in Mo. Bot. Gard. Herb., 7825).

**95.** *C. subcontinuum* Berk. & Curtis, Linn. Soc. Bot. Jour. 10: 337. 1868; Sacc. Syll. Fung. 6: 635. 1888; Masee, Linn. Soc. Bot. Jour. 27: 128. 1890.

Type: in Kew Herb. and Farlow Herb.

Fructifications effused, adnate, rather thick, small pieces separable, becoming chamois-colored in the herbarium, ceraceous, even, sometimes cracking in drying but the cracks not running together, showing the Isabella-colored tissue on the sides of the cracks, the margin thinning out; in section 200–400  $\mu$  thick, Isabella-colored, 2-layered, with a broad layer next to the substratum of brown hyphae 2–3  $\mu$  in diameter, not incrusted, not nodose-septate; spores hyaline, even, subglobose, 3–4  $\mu$  in diameter or  $4 \times 3 \mu$ .

Fructifications recorded as "spreading for several inches." The fragmentary pieces in herbaria are 2–3 cm. long, 1 cm. wide.

On bark and decaying wood. Louisiana, Texas, and West Indies. February to June. Rare.

The fructifications of *C. subcontinuum* resemble in general aspect, thickness, and consistency those of *C. confluens*, but are of different structure from those of the latter and are sharply distinct by the colored substance of the interior. The Louisiana specimens are doubtfully referred to this species.

Specimens examined:

Louisiana: Ruston, *C. J. Humphrey*, 2532 (in Mo. Bot. Gard. Herb., 12495); St. Martinville, *A. B. Langlois*, 1761 b, comm. by W. G. Farlow (in Mo. Bot. Gard. Herb., 42598, and Burt Herb.) and 1761 a, in part.

Texas: locality not given, *C. Wright*, comm. by U. S. Dept. Agr. Herb., under the name *C. calceum*.

Cuba: *C. Wright*, 537, type (in Kew Herb. and Curtis Herb.);  
Omaja, *C. J. Humphrey*, 2575.

Porto Rico: Rio Piedras, *J. A. Stevenson & R. C. Rose*, 6528 (in  
Mo. Bot. Gard. Herb., 55083).

**96. *C. Murrilli* Burt, n. sp.**

Type: in Mo. Bot. Gard. Herb.

Fructifications broadly effused, thick, soft, spongy, dry, flexible, separable in sheets which have the hymenium between light buff and cream-buff and the under side Van Dyke brown, hymenium velutinous, not cracked, the margin concolorous with the hymenium, tomentose; in section 600–900  $\mu$  thick, colored, with the hyphae of the under layer brown, loosely, longitudinally interwoven, rough, nodose-septate, 4–4½  $\mu$  in diameter, and with hymenial layer 75–450  $\mu$  thick with hyaline, interwoven hyphae; no gloeocystidia; basidia simple, with 4 sterigmata; spores hyaline, even, cylindric, 25–35  $\times$  6–9  $\mu$ .

Fructification 7 cm. long, 3½ cm. wide in the piece seen which is broken off at one end and on one side.

On bark of decaying log of an apparently frondose species in a moist virgin forest. Mexico. December.

*C. Murrilli* is probably a species with large, soft, dry fructification separable from the bark in a pliant, sheet-like mass and having the hymenium buff color and the under side a rich Van Dyke brown. The very large spores are another distinguishing character. *C. Langloisii* is thinner and has smaller spores.

Specimens examined:

Mexico: Jalapa, *W. A. & E. L. Murrill*, 182, type, comm. by N. Y. Bot. Gard. (in Mo. Bot. Gard. Herb., 44967).

**97. *C. subochraceum* Bresadola, Hedwigia 35: 290. 1896;  
Sacc. Syll. Fung. 14: 221. 1899.**

Type: part of type in Burt Herb.

Fructifications broadly effused, closely adnate, very thin, not separable, becoming light pinkish cinnamon to wood-brown in the herbarium, glabrous, even, not shining, not cracking, the margin thinning out, whitish at first, becoming colored like the hymenium; in section 45–100  $\mu$  thick, only slightly colored in the hy-

menium and subhymenium but giving the color to the fructification, composed of densely interwoven, distinct hyphae  $3-3\frac{1}{2} \mu$  in diameter, not incrustated, not nodose-septate; no gloeocystidia; spores hyaline, even,  $3-4\frac{1}{2} \times 2-2\frac{1}{2} \mu$ , copious.

Fructifications 1-8 cm. long, 1-2 cm. wide.

On bark and decaying wood of frondose species. Alabama, Louisiana, Nebraska, and Brazil. May and June.

*C. subochraceum* occurs on decaying frondose wood and bark in closely adnate, thin fructifications of wood-brown color due to the pale color of the superficial tissue. The spores were published by Bresadola as  $6-8 \times 4-4\frac{1}{2} \mu$  and the hyphae as conglutinate, but in the original specimen from Bresadola the spores are copious, flattened on one side, and not larger than  $4\frac{1}{2} \times 2\frac{1}{2} \mu$  and the hyphae not conglutinate.

Specimens examined:

Alabama: Auburn, *Earle & Baker* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 58325); Montgomery Co., *R. P. Burke*, 338 (in Mo. Bot. Gard. Herb., 57212).

Louisiana: St. Martinville, *A. B. Langlois*, ab, w, and 1345, comm. by W. G. Farlow (in Mo. Bot. Gard. Herb., 42603).

Nebraska: Lincoln, *C. L. Shear*, 1341.

Brazil: Blumenau, *A. Möller*, part of type from Bresadola.

98. *C. canadense* Burt, n. sp.

Type: in Burt Herb., Mo. Bot. Gard. Herb., and N. Y. State Mus. Herb.

Fructifications broadly effused, adnate, rather thick, membranaceous, small pieces separable when moistened, light buff, even, ceraceous, cracking but little in drying, the margin narrow, sulphur-yellow, with its hyphae interwoven; in section 600-800  $\mu$  thick, colored, stratose, the buried strata becoming fuscous; hyphae of each stratum 3  $\mu$  in diameter, not incrustated, occasionally nodose-septate, erect, loosely arranged below, forming a compact hymenium; no gloeocystidia; spores white in spore collection, cylindric, even,  $4\frac{1}{2}-6 \times 1\frac{1}{2}-2 \mu$ .

Fructifications 3-10 cm. long, 1-5 cm. wide.

On decaying wood of logs of *Pinus Strobus*. Canada and New Hampshire. July to September. Rare.

*C. canadense* has beautiful fructifications with buff hymenium and sulphur-colored margin. The occurrence on pine, stratose structure in section, and the buried strata fuscous in color afford more ample confirmatory distinctive characters than we usually find in resupinate species.

Specimens examined:

Canada: Ontario, Ottawa, *J. Macoun*, 26, type (in Burt Herb., N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55909).

New Hampshire: Chocorua, *W. G. Farlow* (in Mo. Bot. Gard. Herb., 6766), 8, and *E. A. Burt*.

99. *C. bicolor* Peck, Buffalo Soc. Nat. Hist. Bul. 1: 62. 1873; N. Y. State Mus. Rept. 26: 72. 1874; Sacc. Syll. Fung. 6: 630. 1888; Masee, Linn. Soc. Bot. Jour. 27: 157. 1890.

Type: in N. Y. State Mus. Herb.

Fructifications widely effused, thin, membranaceous, tender, small pieces separable when moist, white, becoming pale pinkish buff to cream color in the herbarium, even, continuous, not cracked, the subiculum wax-yellow throughout, byssoid, the margin yellow to wax-yellow, often running out into wax-yellow rhizomorphic strands; in section 200–300  $\mu$  thick, yellow near the substratum and usually throughout, color not changed by lactic acid but bleached by potassium hydrate solution; the hyphae loosely interwoven, delicate,  $2\frac{1}{2}$   $\mu$  in diameter, somewhat rough or incrustated with small crystals; no gloeocystidia; spores hyaline, even, subglobose, 2  $\mu$  in diameter or  $3 \times 2$   $\mu$ , copious.

Fructifications 3–8 cm. long, 2–3 cm. wide.

On under side of fallen limbs and decaying wood on the ground, usually on pine and other conifers but also on *Populus*. New Hampshire to New Jersey and in Montana and Washington. August to November. Uncommon.

*C. bicolor* is a beautiful species related to *C. sulphureum*, from which it constantly differs in occurring nearly always in fertile condition with a compact whitish, even hymenium borne on the brilliant, wax-yellow subiculum. The hyphae and spores are similar to those of *C. sulphureum*.

Specimens examined:

New Hampshire: Chocorua, *A. P. D. Piguet*, comm. by *W. G.*

Farlow, 176, and *W. G. Farlow* (in *Mo. Bot. Gard. Herb.*, 55249 and 13630, respectively).

New York: Karner, *H. D. House*, comm. by N. Y. State Mus. Herb., 14.152; Oneida, *H. D. House* (in N. Y. State Mus. Herb., and *Mo. Bot. Gard. Herb.*, 57452, 57476); Warrensburg, *C. H. Peck*, type (in N. Y. State Mus. Herb.) and (in N. Y. State Mus. Herb., and *Mo. Bot. Gard. Herb.*, 55771).

New Jersey: Newfield, *J. B. Ellis*, 88, comm. by W. G. Farlow (in *Mo. Bot. Gard. Herb.*, 7944).

Montana: Evaro, *J. R. Weir*, 419, 435 (in *Mo. Bot. Gard. Herb.*, 14768, 6707).

Washington: Hoquiam, *C. J. Humphrey*, 6400.

**100.** *C. koleroga* (Cooke) v. Höhnelt, K. Akad. Wiss. Wien Sitzungsber. **119**: 395. 1910; Burt, *Mo. Bot. Gard. Ann.* **5**: 123. *f. 1.* 1918.

*Pellicularia koleroga* Cooke, *Grevillea* **4**: 116, 134. 1876; Pop. Sci. Rev. **15**: 164. *pl. 135, f. a-c.* 1876; Linn. Soc. Bot. Jour. **18**: 461. 1881; Sacc. Syll. Fung. **4**: 149. 1886; Fawcett, G. L., Porto Rico Agr. Exp. Sta. Ann. Rept. **1910**: 35. 1911; Jour. Agr. Res. **2**: 231. *text f. 1-3.* 1914; Porto Rico Agr. Exp. Sta. Bul. **17**: 8. *pl. 1.* 1915.—*Erysiphe scandens* Ernst, A., Estudios sobre las Deformaciones, Enfermedades y Enemigos del Arbol de Cafe in Venezuela, 16. *pl. f. 5.* 1878.

Type: in Kew Herb.

The parasitic vegetative mycelium forms long, slender, mycelial strands of rather uniform diameter, whitish or pallid at first, finally fuscous, running along the branches and midrib and veins of the leaves, infecting the leaves and ramifying between the cells of the leaf parenchyma, finally emerging at many points on the under side of the leaf to form minute fructifications which give a mottled appearance to the leaf; fructifications soon laterally confluent into a thin, arachnoid, perforate membrane covering the under surface of the leaf between midrib and principal veins, drying pale smoke-gray, separable in small pieces, composed of loosely interwoven, hyaline or slightly colored, thin-walled, even, rigid hyphae  $4\frac{1}{2}$ –6  $\mu$  in diameter, not nodose-septate, running parallel with the substratum, and about 1–3 hyphae thick, branching at right angles; basidia scattered along the hyphae, simple, ovoid, 10–

$12 \times 7-8 \mu$ , with short sterigmata; spores hyaline, even, flattened or slightly concave on one side,  $10-13 \times 3\frac{1}{2}-5 \mu$ .

Mycelial strands in the specimens received are 35 cm. long and broken with the branch at the lower end,  $\frac{1}{2}-1$  mm. in diameter, not swollen into sclerotia; fructifications 9 cm. long, 4 cm. broad,  $30-45 \mu$  thick, more or less divided by the midrib and principal veins.

Parasitic on branches and leaves of the coffee plant. India, and the Antilles and neighboring regions of South America.

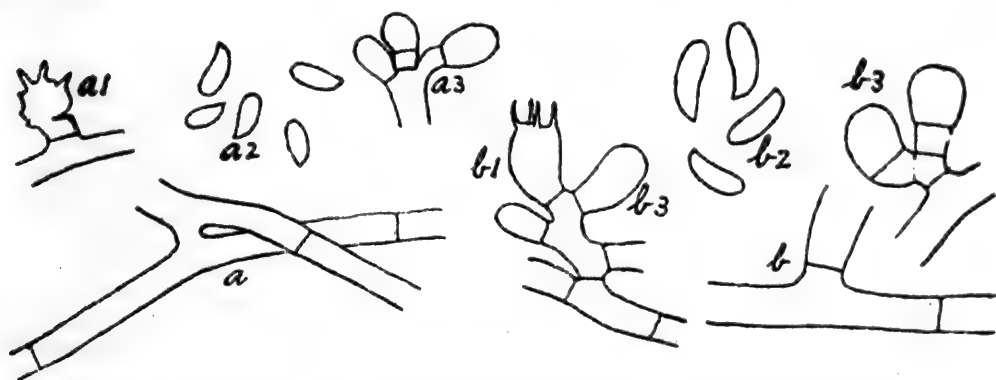


Fig. 1. *C. koleroga*. *a-a3*, from sketches by Miss Wakefield of structure of type in Kew Herbarium; magnification not stated but computed from spore dimensions at about 630. *a*, hypha; *a1*, collapsed basidium; *a2*, spores; *a3*, young basidia. *b-b3*, from Porto Rican specimen,  $\times 870$ . *b*, hypha; *b1*, basidium; *b2*, spores; *b3*, young basidia.

#### Specimens examined:

India: Mysore, preparation from the type (in Kew Herb.).

Porto Rico: Mayaguez, *F. L. Stevens*, 9488 (in Stevens Herb., and in Mo. Bot. Gard. Herb., 54510); *H. E. Thomas* (in Mo. Bot. Gard. Herb., 55397).

Colombia: *H. T. Dave*, fragment (in Mo. Bot. Gard. Herb. from specimen in Kew Herb.).

Venezuela: *A. Ernst*, fragments showing mottled stage and continuous fructification respectively (in Mo. Bot. Gard. Herb. from specimens in Kew Herb., determined by Ernst as *Candelillo*, *Erysiphe scandens*); *H. Peltier*, comm. by U. S. Dept. Agr., Path. & Myc. Coll., 1713 (in Mo. Bot. Gard. Herb., 62168).

101. *C. Stevensii* Burt, Mo. Bot. Gard. Ann. 5: 125. text f. 2. 1918.

*Hypochnopsis ochroleuca* Noack, Boletim do Instituto Agronomico Sao Paulo em Campinas 9: 80. 1898.—*Hypochnus ochroleucus* Noack in Sacc. Syll. Fung. 16: 197. 1902; Stevens, Science N. S. 26: 724. 1907; Stevens & Hall, Ann. Myc. 7: 49–59. text f. 1–8. 1909.—Not *Corticium ochroleucum* Bresadola, Fungi Trid. 2: 58. pl. 167, f. 2. 1892.

Vegetative mycelium forms on the twigs roundish or oblong, chestnut-brown sclerotia 3–4 mm. in diameter, and also slender mycelial strands white when young, becoming chestnut-brown, running along the twigs and petioles to the leaves and fructifying there; fructifications at first downy and barely visible, soon thickening into a dirty pinkish buff, felty membrane covering the whole under side of the leaf and frequently separable from it as a

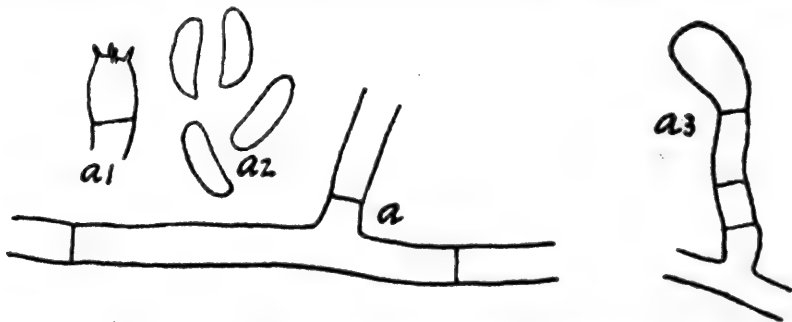


Fig. 2. *C. Stevensii*. From specimen from Trinidad,  $\times 870$ . a, hypha; a1, basidium; a2, spores; a3, young basidium.

whole by mere handling; hyphae hyaline or slightly colored, giving their color to the fructifications, even, thin-walled, not incrustated, not nodose-septate,  $4\frac{1}{2}$ – $7\frac{1}{2}$   $\mu$  in diameter; basidia scattered along the hyphae on short lateral branches, simple,  $11 \times 7$ – $8$   $\mu$ , with four short sterigmata; spores hyaline, flattened or slightly concave on one side,  $8$ – $11 \times 3$ – $4$   $\mu$ .

Fructification 11 cm. long, 3–4 cm. broad, 45–60  $\mu$  thick, unbroken over whole under surface of leaves; sclerotia 3–4 mm. in diameter; mycelial strands  $\frac{1}{2}$ –1 mm. in diameter, many cm. long.

On apple, pear, and quince, in Brazil and southern United States, causing the leaves to dry and fall, and on *Codiaeum* in Trinidad.

This species differs from *Corticium koleroga* by having sclerotia and thicker, darker-colored, and more felted fructifications which are but feebly attached to the leaf and form an unbroken covering

over the whole under surface of the leaf from margin to margin. Fruiting specimens of this fungus have been available for study from only two localities, but these specimens agree in the characters stated above.

Specimens examined:

North Carolina: Horseshoe, *J. G. Hall*, comm. by F. L. Stevens, sclerotial stage on pear twigs; Mt. Airy, *F. C. Reimer*, comm. by F. L. Stevens, fertile stage on pear leaves.

Georgia: *A. L. Quaintance*, comm. by F. S. Earle, sclerotial stage on apple twigs.

Florida: *C. G. Lloyd*, sclerotial stage on pear twigs.

Texas: Dickson, *F. W. Mally*, comm. by U. S. Dept. Agr., sclerotial stage on pear twigs.

Trinidad: Diego Martei, *J. B. Rorer*, fertile stage on leaves of *Codiaeum variegatum* (in Mo. Bot. Gard. Herb., 44771); Petit Valley, *J. B. Rorer*, sclerotial and fruiting stages on leafy twigs of *Codiaeum variegatum* (in Mo. Bot. Gard. Herb., 11960, 19786, 19810, and 20062).

**102. *C. vagum* Berk. & Curtis**, Grevillea 1: 179. 1873; Sacc. Syll. Fung. 6: 616. 1888; Massee, Linn. Soc. Bot. Jour. 27: 148. 1890; Duggar, Mo. Bot. Gard. Ann. 2: 445. 1915; Peltier, Univ. Ill. Agr. Exp. Sta. Bul. 189: 285. 1915; Burt, Mo. Bot. Gard. Ann. 5: 128. text f. 3. 1918; Coker, Elisha Mitchell Scientif. Soc. Jour. 36: 173. pl. 33, f. 9, 10. 1921.

*Corticium vagum* Berk. & Curtis var. *Solani* Burt in Rolfs, Science N. S. 18: 729. 1903; Colo. Agr. Exp. Sta. Bul. 91: 1-20. pl. 1-5. 1904.—*Hypochnus Solani* Prill. & Del. Soc. Myc. Fr. Bul. 7: 220. text f. 1891; Sacc. Syll. Fung. 11: 130. 1895.—*Corticium Solani* Prill. & Del. in Bourdot & Galzin, Soc. Myc. Fr. Bul. 27: 248. 1911.—*Corticium botryosum* Bresadola, Ann. Myc. 1: 99. 1903; Sacc. Syll. Fung. 17: 173. 1905; Bourdot & Galzin, Soc. Myc. Fr. Bul. 27: 248. 1911.—*Rhizoctonia Solani* Kühn, Krankheiten d. Kulturgewächse, 224. 1858; Duggar, Mo. Bot. Gard. Ann. 2: 424. 1915.

Type: in Kew Herb. and in Curtis Herb.

Vegetative mycelium saprophytic in the soil and in wood in contact with the ground, and parasitic as the *Rhizoctonia Solani* stage

in underground portions of various plants and forming at their surface underground minute sclerotia; fructification a thin, arachnoid, perforate membrane more or less separable, pale olive-buff to cream color; in structure 60–100  $\mu$  thick, composed of a few loosely interwoven hyphae running along the substratum and sending out short branches which bear the basidia; hyphae in contact with substratum may be slightly brownish, hyaline elsewhere, not incrusted, not nodose-septate, up to 6–10  $\mu$  in diameter, with branches smaller; basidia not forming a compact hymenium, 10–20  $\times$  7½–11  $\mu$ , with 4–6 sterigmata 6–10  $\mu$  long

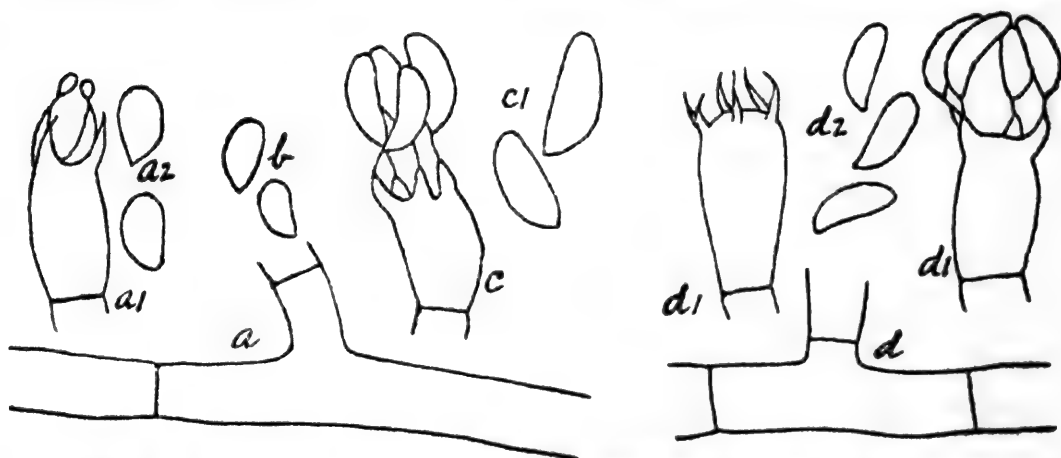


Fig. 3. *C. vagum*,  $\times$  870. *a*–*a2*, from specimen on potato in Colorado. *a*, hypha; *a1*, basidium; *a2*, spores. *b*, spores of specimen on *Plantago* in Illinois. *c*–*c1*, from specimen on earth in Massachusetts. *c*, basidium; *c1*, spores. *d*–*d2*, from specimen on wood in British Columbia. *d*, hypha; *d1*, basidia; *d2*, spores.

and more or less swollen towards the basidium; spores hyaline, even, flattened on one side, 8–14  $\times$  4–6  $\mu$ .

Fructifications 5–15 cm. long on logs, 5–10 cm. broad; in a collar 1–10 cm. long, sheathing the base of living stems.

On bare earth, wood and bark lying on the ground, and on living stems of potatoes, beans, rhubarb, horseradish, tomatoes, *Amaranthus*, etc., at or near the ground. New Brunswick to Florida and westward to Vancouver and Washington, in West Indies, Europe, India, and Australia. Common.

*Corticium vagum* differs from *C. koleroğa* and *C. Stevensii* in having its mycelium and sclerotia subterranean when parasitic, in having its fructifications at the surface of the ground or merely sheathing small herbaceous stems for only a few centimeters up from the ground and never spreading out on the under side of

broad leaves at a considerable distance above ground, by having larger hyphae, larger basidia, and the basidia with larger sterigmata which are more thickened in the lower portion and sometimes six to a basidium; the spores are somewhat larger in *C. vagum* also. The examination of the large amount of *C. vagum* which has come to hand does not afford ground for regarding the collar-like fructifications on small living herbaceous stems as worthy of varietal separation. As common as this species now is in the United States, it is rather surprising that a collection of it under some name has not been found in Herb. Schweinitz.

Specimens examined:

Exsiccati: Ellis, N. Am. Fungi, 330; Ravenel, Fungi Am., 132, 577  
—the latter under the name *Zygodesmus pannosus*.

Sweden: Stockholm, L. Romell, 204.

Russian Poland: Eichler, comm. by Bresadola, portion of type of *Corticium botryosum* Bres.

New Brunswick: Campobello, W. G. Farlow, 3.

Canada: J. Macoun, 2, 84, 340.

Ontario: Ottawa, J. Macoun, 327.

Massachusetts: Brookline, G. R. Lyman, 180; Magnolia, W. G. Farlow.

New York: Albany, H. D. House & J. Rubinger (in Mo. Bot. Gard. Herb., 8734); East Galway, E. A. Burt, 2 collections; Ithaca, Van Hook, comm. by G. F. Atkinson, 8092; Karner, H. D. House, 14.162, and 3 other collections (in N. Y. State Herb. and Mo. Bot. Gard. Herb., 44709, 54349, 55199, 55203); Tripoli, S. H. Burnham, 13, in part (in Mo. Bot. Gard. Herb., 54506).

New Jersey: Belleplain, C. L. Shear, 1244; Newfield, J. B. Ellis, in Ellis, N. Am. Fungi, 330.

Pennsylvania: Carbondale, E. A. Burt; Trexlertown, W. Herbst, 95.

Maryland: Takoma Park, C. L. Shear, 1164, 1334.

District of Columbia: Takoma Park, C. L. Shear, 965, 1041 (the former in Mo. Bot. Gard. Herb. also).

South Carolina: Curtis Herb., 3240, type (in Kew Herb. and in Curtis Herb.); Aiken, H. W. Ravenel, in Ravenel, Fungi Am., 132, 577.

Alabama: Montgomery, *R. P. Burke*, 170 (in Mo. Bot. Gard. Herb., 43162).

West Virginia: Paw Paw, *C. L. Shear*, 1171.

Ohio: Cincinnati, *C. G. Lloyd*, 4508.

Illinois: Urbana, *G. L. Peltier*, 14 collections, on living stems of beans, carrot, tomato, radish, rhubarb, horseradish, potato, winter vetch, spinach, *Amaranthus*, *Campanula*, and *Plantago major* (in Mo. Bot. Gard. Herb., 6264, 8761–8765, 8816, 43836, 44677–44682).

Montana: Evaro, *J. R. Weir*, 434 (in Mo. Bot. Gard. Herb., 17725).

Idaho: Coolin, *J. R. Weir*, 11545 (in Mo. Bot. Gard. Herb., 63298). Priest River, *J. R. Weir*, 140, 89 in part (Mo. Bot. Gard. Herb., 8197, 11349).

Colorado: Fort Worth, *F. M. Rolfs*, 2 collections, on living stems of potatoes.

Manitoba: Norway House, *G. R. Bisby*, 1475, 1477 (in Mo. Bot. Gard. Herb., 61657, 61659).

British Columbia: Sidney, *J. Macoun*, 4, 20, 83, 85, 87, 26, 154 (in Mo. Bot. Gard. Herb., 5764, 5735, 7068, 7024, 7833, 55347, 55350, respectively) and 39a, 151, 172 (in Macoun Herb.); Vancouver Island, *J. Macoun*, V89, V90, V151, V154, V172 (in Mo. Bot. Gard. Herb., 22815, 22927, 20357, 20507, 20728, respectively).

Washington: Bingen, *W. N. Suksdorf*, 846, 852, 863.

India: Ceylon, *T. Petch*, 5675 (in Mo. Bot. Gard. Herb., 56035).

Japan: Prov. Awaji, *A. Yasuda*, 111 (in Mo. Bot. Gard. Herb., 57027).

**103. *C. vinaceum* Burt, n. sp.**

Type: in Burt Herb.

Fructifications effused, very thin, closely adnate, drying between light pinkish cinnamon and vinaceous-buff, even, not shining, not cracked, the margin similar, thinning out; in section 75–100  $\mu$  thick, colored near the substratum, with the hyphae  $2\frac{1}{2}$   $\mu$  in diameter, densely longitudinally interwoven and conglutinate, not incrustated, bearing a hymenium 25  $\mu$  thick; no gloeocystidia; basidia not protruding; spores white in spore collection, even, subglobose,  $7-8 \times 6-7$   $\mu$ .

Fructifications 5–10 mm. in diameter, near together and becoming irregularly confluent over areas up to 4 cm. long, 1–2 cm. wide.

Under side of decaying coniferous plank. Alabama and Louisiana. March.

The distinguishing characters of this species are occurrence on coniferous wood in closely adnate, vinaceous fructifications, which are somewhat colored next to the substratum and have large spores.

Specimens examined:

Alabama: Montgomery, *R. P. Burke*, 271 (in Mo. Bot. Gard. Herb., 57156).

Louisiana: St. Martinville, *A. B. Langlois*, *df*, type.

**104. *C. fuscostratum* Burt, n. sp.**

Type: in N. Y. State Mus. Herb., Mo. Bot. Gard. Herb., and Burt Herb.

Fructifications broadly effused, thin, tender, forming a thin, fragile, cartridge-buff to pale smoke-gray hymenial pellicle on an arachnoid or fibrillose, wood-brown subiculum, the hymenium cracking into small polygonal masses about 1 mm. in diameter, the margin colored like the substance, fimbriate; in section 120–300  $\mu$  thick, wood-brown, with the hyphae pale brownish,  $2\frac{1}{2}$   $\mu$  in diameter, nodose-septate, sometimes incrustated; no gloeocystidia; spores hyaline, even, flattened on one side,  $3-4 \times 2$   $\mu$ .

Fructifications 3–6 cm. long, 2–3 cm. wide.

On bark of decaying *Pinus Strobus* and other conifers. Canada to Maryland and westward to British Columbia. August to December. Uncommon.

The fructifications of *C. fuscostratum* are characterized by a hymenial layer as thin, fragile, and cracked as that of *C. arachnoideum* or of *C. centrifugum* and a supporting layer underneath as colored as that of *C. subcontinuum*. Compare *C. ochroleucum* Bres. and *C. olivaceo-album*.

Specimens examined:

Canada: *J. Macoun*, 15; St. Lawrence Valley, *J. Macoun*, 29.

New York: Albany, *H. D. House*, type (in N. Y. State Mus. Herb., Mo. Bot. Gard. Herb., 63750, and Burt Herb.), and *H. D.*

*C. ochroleucum* Bres.

*House & J. Rubinger* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 7766); Round Lake, *C. H. Peck*, (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 42930).

Pennsylvania: Freeland, *C. R. Orton & G. E. Broadbent*, comm. by L. O. Overholts, 5166 (in Mo. Bot. Gard. Herb., 56359).

Maryland: Takoma Park, *C. L. Shear*, 963.

Michigan: East Tawas, *J. R. Weir*, 317 (in Mo. Bot. Gard. Herb., 6961); New Richmond, *C. H. Kauffman*, 86 (in Mo. Bot. Gard. Herb., 54327).

Wisconsin: Star Lake, *J. J. Neumann*, comm. by H. von Schrenk (in Mo. Bot. Gard. Herb., 42734).

British Columbia: Kootenai Mountains near Salmo, *J. R. Weir*, 503, 511 (in Mo. Bot. Gard. Herb., 63722, 5900).

**105.** *C. atrovirens* Fries, *Epier.* 562. 1838; *Hym. Eur.* 651. 1874; Berkeley, *Outl. Brit. Fung.* 274. 1860; *Sacc. Syll. Fung.* 6: 614. 1888; Masee, *Linn. Soc. Bot. Jour.* 27: 155. 1890; Bresadola, *Ann. Myc.* 1: 96. 1903; Maire, *Brit. Myc. Soc. Trans.* 3: 172. *pl.* 16. 1910; Bourdot & Galzin, *Soc. Myc. Fr. Bul.* 27: 243. 1911; Rea, *Brit. Basid.* 677. 1922.

*Thelephora atrovirens* Fries, *Elenchus Fung.* 1: 202. 1828.—*Lyomyces caerulescens* Karsten, *Finska, Vet.-Soc. Bidrag Natur och Folk* 37: 154. 1882.—*Hypochnus chalybaeus* Schroeter, *Krypt.-Fl. Schlesien* 3: 416. 1888.

Fructifications irregularly effused, thin, floccose-fibrillose or arachnoid, greenish glaucous blue to deep bluish gray-green, even, not cracked, the margin thinning out, with hyphae interwoven; in section 150–250  $\mu$  thick, colored like the hymenium, composed of long, slender, interwoven, colored hyphae 2–3  $\mu$  in diameter, not nodose-septate, not incrustated; no gloeocystidia; spores colored like the fructification, even, subglobose, 3–4  $\times$  2½–3½  $\mu$ , borne 4 to a basidium.

Fructifications 1–4 cm. long, 1–2 cm. wide.

On under side of decaying bark and fallen branches. In Europe, and from New Brunswick to South Carolina and in Illinois. September to December. Infrequent.

*C. atrovirens* is conspicuous by its fructifications blue-green in all parts. It is intermediate between *Corticium* and *Hypochnus*, being included in the former on account of the even spores.

## Specimens examined:

Exsiccati: Sydow, Myc. Germ., 1432.

Finland: Mustiala, P. A. Karsten, authentic specimen of *Hypochnopsis caerulea*.

Germany: Brandenburg, P. Vogel, in Sydow, Myc. Germ., 1432.

Poland: Russian Poland, Eichler, comm. by G. Bresadola.

Great Britain: Coed Coch (in Berkeley Herb. of Kew Herb.).

New Brunswick: Campobello, W. G. Farlow.

Vermont: Middlebury, E. A. Burt, 2 gatherings.

Massachusetts: Beverly, C. W. Dodge & D. H. Linder, A (in Mo. Bot. Gard. Herb., 63451); Stony Brook, G. R. Lyman, 129.

New York: Cascadilla, A. J. Pieters, comm. by Cornell Univ.

Herb., 5256; Ithaca, G. F. Atkinson, 8202; Karner, H. D.

House, 14.205 and an unnumbered specimen (in Mo. Bot.

Gard. Herb., 44727, 54394); Syracuse, L. M. Underwood, 44

(in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 56088).

North Carolina: Blowing Rock, G. F. Atkinson, 4301.

South Carolina: Gourdin, C. J. Humphrey, 2586 (in Mo. Bot. Gard. Herb., 43119).

Illinois: Hallidayboro, C. J. Humphrey, 2125 (in Mo. Bot. Gard. Herb., 22086).

106. *C. caeruleum* (Schrad.) Fries, Epicr. 562. 1838; Hym. Eur. 651. 1874; Berkeley, Outl. Brit. Fung. 274. 1860; Berk. & Curtis, Grevillea 1: 178. 1873; Sacc. Syll. Fung. 6: 614. 1888; Massee, Linn. Soc. Bot. Jour. 27: 151. 1890; Bourdot & Galzin, Soc. Myc. Fr. Bul. 27: 232. 1911; Wakefield, Brit. Myc. Soc. Trans. 4: 119. pl. 3, f. 26. 1913; Coker, Elisha Mitchell Scientif. Soc. Jour. 36: 169. pl. 33, f. 1. 1921; Rea, Brit. Basid. 673. 1922.

*Thelephora caerulea* Schrader in De Candolle, Fl. Fr. 2: 107. 1815; Persoon, Myc. Eur. 1: 147. 1822; Fries, Elench. Fung. 1: 202. 1828.—*Auricularia phosphorea* Sowerby, Eng. Fungi, pl. 350. 1802.—*Thelephora Indigo* Schweinitz, Naturforsch. Ges. Leipzig Schrift. 1: 107. 1822.

Fructifications somewhat round, broadly effused, adnate, rather thick, membranaceous, separable when moist, indigo-blue to induline blue, even, somewhat velvety, the margin thin-

ning out, concolorous or whitish; in section 200–500  $\mu$  thick, thickening by becoming stratose, the outer stratum deep blue, the hyphae thick-walled, interwoven, nodose-septate, not incrustated, 3–4½  $\mu$  in diameter; no gloeocystidia; spores even, 6–10  $\times$  4½–5  $\mu$ .

Fructifications 3–10 cm. in diameter.

On under side of decaying limbs of *Quercus* and other frondose species. In Europe, southern United States, Illinois, and Japan. August to November. Probably in quantity where found.

*C. caeruleum* is easily recognized by its deep blue color and occurrence on fallen oak limbs.

Specimens examined:

Exsiccati: Cava, *Fungi Longobardiae*, 13; Cooke, *Fungi Brit.*, 221, and ed. II, 5; Libert, *Pl. Crypt. Ard.*, 22; Ravenel, *Fungi Am.*, 451; Ravenel, *Fungi Car.* 3: 27; de Thümen, *Myc. Univ.*, 1207; Westendorp, *Crypt. Belge*, 767.

Denmark: Skarup, *E. Rostrup*, in de Thümen, *Myc. Univ.*, 1207.

Italy: Cava, in Cava, *Fungi Longobardiae*, 13.

Belgium: in Westendorp, *Crypt. Belge*, 767.

France: Libert, in Libert, *Pl. Crypt. Ard.*, 22; Corrombles, *F. Fautrey*, comm. by Lloyd Herb.

England: Chichester, in Cooke, *Fungi Brit.*, ed. II, 5.

South Carolina: H. W. Ravenel, in Ravenel, *Fungi Car.* 3: 27; Aiken, H. W. Ravenel, *Fungi Am.*, 451.

Georgia: Atlanta, E. Bartholomew, 5679 (in Mo. Bot. Gard. Herb., 44218).

Florida: Sanford, C. L. Shear, 5204 (in Mo. Bot. Gard. Herb., 62164).

Alabama: Auburn, F. S. Earle (in Lloyd Herb., 3450, Burt Herb., and Mo. Bot. Gard. Herb., 4851), Earle & Baker, comm. by A. B. Seymour (in Mo. Bot. Gard. Herb., 16394); G. L. Peltier (in Mo. Bot. Gard. Herb., 4684), A. H. W. Povah, 906 (in Mo. Bot. Gard. Herb., 58692), and F. A. Wolf (in Mo. Bot. Gard. Herb., 43983); Montgomery County, R. P. Burke (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61562), and 14 (in Mo. Bot. Gard. Herb., 16983).

Illinois: Anna, C. J. Humphrey, 1356 (in Mo. Bot. Gard. Herb., 42932).

Arkansas: Womble, *W. H. Long*, 19769 (in Mo. Bot. Gard. Herb., 8961).

Japan: Sendai, *A. Yasuda* (in Mo. Bot. Gard. Herb., 58236).

#### EXTRA LIMITAL SPECIES

**107. *C. paniculatum* Burt, n. sp.**

Type: in Burt Herb.

Fructifications effused, thin, adnate, somewhat membranaceous, small pieces separable, pinkish cinnamon in the herbarium, even, not shining, not cracked, the margin narrow, thinning out, with hyphae interwoven; in section 200  $\mu$  thick, not colored, composed of loosely interwoven, hyaline hyphae 3  $\mu$  in diameter, not incrusted, not nodose-septate, and of irregularly arranged gloeocystidia or conducting organs up to  $30-75 \times 3-6 \mu$ , flexuous or irregular in form; paraphyses brownish, giving their color to the hymenium, paniculately branched, with the ultimate branches very slender, projecting beyond the basidia and forming the hymenial surface; basidia cylindric-clavate,  $30-40 \times 4\frac{1}{2}-6 \mu$ ; no spores found.

Fructifications 2 cm. long, 5 mm. wide, confluent longitudinally.

On small, decaying, frondose limbs. Paraguay. August.

*C. paniculatum* is distinguished among the *Corticiums* which have gloeocystidia by its pinkish cinnamon color and hymenial surface composed of conspicuous, somewhat colored, bushy-branched paraphyses.

Specimens examined:

Paraguay: Paraguari, *Malme*, 1081, type, comm. by L. Romell, 331.

#### SPECIES TOO INCOMPLETELY DESCRIBED FOR LOCATION AMONG PRECEDING SPECIES

**108. *C. dendriticum* P. Hennings**, *Hedwigia* 41: Beiblatt, 102. 1902; *Sacc. Syll. Fung.* 17: 168. 1905; v. Höhnelt & Litschauer, *K. Akad. Wiss. Wien Sitzungsber.* 116: 742. 1907.

Type: in Berlin Herb.

"Carnoso-ceraceum, pallide carneum, dendroideo-ramosum vel radiato-effusum, margine sicco reflexo, albo-villosulo; hymenio

ceraceo, pruinoso carneo, sicco rimoso, basidiis clavatis, 2-4-sterigmatibus,  $20-28 \times 7-8 \mu$ ; sporis subglobosis, subroseis, levibus,  $4-5 \mu$ .

"San Jose de Costa Rica auf Stämmen von Orangen.—H. Pittier.

"Der Pilz bildet fleischige, dendritisch verzweigte, fleischrothe Lager, derselbe soll eine Krankheit der Stämme verursachen. Mit *C. salicinum* Fr. und *C. sarcoides* Fr. verwandt."

Von Höhnelt and Litschauer, in their study of the type specimen of *C. dendriticum*, found the spores  $10-11 \times 8 \mu$ , 4 sterigmata constantly, and the fructifications seated upon a lichen instead of directly on the trunk of *Citrus aurantium*.

#### EXCLUDED SPECIES

*Corticium ferax* Ell. & Ev. Am. Nat. 31: 339, 1897; Sacc. Syll. Fung. 14: 219. 1899.

Sections of the type specimen in Ellis Coll. in N. Y. Bot. Gard. Herb. show this to be a Hyphomycete. A specimen under this name collected on coniferous wood, Beaver Meadow, Hull, Quebec, was communicated by J. Macoun as the *Corticium ferax* Ell. & Ev. of Canadian Cryptogams, 246, Nat. Hist. Survey of Canada Herb.; this is *Peniophora glebulosa*.

#### SUPPLEMENT

Since the publication of the earlier parts, the following species have been received which were not included in those parts or require further notice.

#### ALEURODISCUS

See also account of species of *Aleurodiscus* by Lloyd, Myc. Writ. 6: Myc. Notes 62: 926. f. 1666-1688. 1920; 65: 1066. f. 2009-2012. 1921.

*Aleurodiscus cerussatus* (Bres.) v. Höhnelt & Litschauer, K. Akad. Wiss. Wien Sitzungsber. 116: 807. pl. 4, f. 1. 1907; Bourdot & Galzin, Soc. Myc. Fr. Bul. 28: 351. 1913.

*Corticium cerussatum* Bresadola, Fungi Trid. 2: 37. pl. 144, f. 3.

1892; I. R. Accad. Agiati Atti III. 3: 112. 1897; Sacc. Syll. Fung. 11: 126. 1895.—*Kneiffia cerussata* Bresadola, Ann. Myc. 1: 104. 1903.

Type: in Burt Herb., an authentic specimen which is probably a part of the type.

Fructifications effused, closely adnate, thin, waxy, white at first, becoming between pinkish buff and cream-buff in the herbarium, even, somewhat pruinose under a lens, cracking at right angles when old into masses about 3–4 to a mm., the margin similar, thinning out; in section 100–150  $\mu$  thick; not colored, composed of suberect, interwoven, densely crowded hyphae about 2  $\mu$  in diameter and of very numerous gloeocystidia; gloeocystidia flexuous, 40–60  $\times$  4–6  $\mu$ ; bottle-brush paraphyses form the hymenial surface; spores hyaline, even, 12–15  $\times$  7–8  $\mu$ .

Fructifications 1–7 cm. long, 2–10 mm. wide.

On old, weathered, coniferous wood. Europe, Manitoba, and Oregon. June to October.

*C. cerussatus* is distinguished from our other species of *Aleurodiscus* with the exception of *A. succineus*, by having both gloeocystidia and bottle-brush paraphyses and from the latter by being effused.

Specimens examined:

Italy: Trient, *G. Bresadola*, part of type probably.

Manitoba: Binscarth, *G. R. Bisby*, 1050 (in Mo. Bot. Gard. Herb., 59037); Winnipeg, *G. R. Bisby*, 65 (in Mo. Bot. Gard. Herb., 57899), and comm. by L. O. Overholts, 7027 (in Mo. Bot. Gard. Herb., 57475).

Oregon: Granite Pass, *J. R. Weir*, 8682 (in Mo. Bot. Gard. Herb., 36743).

*A. disciformis* (DC.) Patouillard, Soc. Myc. Fr. Bul. 10: 80. text f. 1894; v. Höhnelt & Litschauer, K. Akad. Wiss. Wien Sitzungsber. 116: 798. pl. 1, f. 1. 1907; Bourdot & Galzin, Soc. Myc. Fr. Bul. 28: 350. 1913; Rea, Brit. Basid. 671. 1922.

*Thelephora disciformis* De Candolle, Fl. Fr. 6: 31. 1915; Fries, Syst. Myc. 1: 443. 1821.—*Stereum disciforme* (DC.) Fries, Epier. 551. 1838; Hym. Eur. 642. 1874; Patouillard, Tab. Anal. Fung. 112. f. 250. 1884.—*Peniophora disciformis* (DC.) Cooke,

*Grevillea* 8: 20. *pl.* 122, *f.* 2. 1879; Sacc. *Syll. Fung.* 6: 642. 1888.

Fructifications effused, disciform, rather thick, pale olive-buff to cartridge-buff in the herbarium, pulverulent to velutinous, even, becoming somewhat cracked, the margin free, narrow, somewhat elevated, somewhat ochraceous on the under side; in section 150–800  $\mu$  thick, not colored, composed of erect, densely arranged hyphae 3–4  $\mu$  in diameter, with a great deal of crystalline matter intermixed; paraphyses  $4\frac{1}{2}$ –6  $\mu$  in diameter, cylindric, sometimes becoming irregularly swollen, sometimes somewhat moniliform toward the apex; spores hyaline, even,  $15\text{--}20 \times 11\text{--}15 \mu$ .

Fructifications  $\frac{1}{2}$ – $2\frac{1}{2}$  cm. in diameter, or  $\frac{1}{2}$ – $2\frac{1}{2}$  cm. long,  $\frac{1}{2}$ –1 cm. wide.

On bark of *Quercus*. Europe, Mexico, and Africa. August to May.

*A. disciformis* is a species whose large fructifications resemble in aspect those of *A. candidus* although not as white as the latter and with paraphyses related in form to those of *A. amorphus*.

Specimens examined:

Austria: Vienna, V. Litschauer.

Italy: Trentino, G. Bresadola.

France: Aveyron, M. Galzin, 9503, comm. by H. Bourdot, 18550; locality not stated, Mougeot (in Farlow Herb.).

Mexico: locality not stated, A. Dampf (in Weir Herb.).

Africa: Union of South Africa, Stellenbosch, P. A. van der Bijl, 658 (in Mo. Bot. Gard. Herb., 59358).

*A. helveolus* Bresadola, *Mycologia* 17: 71. 1925.

Type: in Weir Herb.

Fructifications erumpent, pulvinate to short-clavate, sessile, rugulose, waxy, somewhat gelatinous, Hay's brown, drying somewhat fuscous; hyphae hyaline, not incrusted,  $4\frac{1}{2}$ –6  $\mu$  in diameter; no conducting organs; basidia simple, large,  $45\text{--}80 \times 6\text{--}8 \mu$ , with 2–4 sterigmata; spores hyaline, even,  $18\text{--}21 \times 6\text{--}9 \mu$  according to Bresadola; hymenium surrounds the clubs on all sides.

Fructifications about 2 mm. high and 1 mm. in diameter when moistened.

On bark of dead *Salix lasiandra*. Washington. November.

The dried fructifications of *A. helveolus* have some resemblance in aspect to those of *Stereum rufum* but swell on softening and rise to a height of 2 mm. above the bark. The paraphyses were described by Bresadola as "paraphysibus irregularibus, undulato-restrictis, moniliformibus, laevibus, 3-6  $\mu$  crassis, apice interdum subcapitatis" but they do not show clearly in my preparation.

Specimens examined:

Washington: Spokane, alt. 576 m., *J. R. Weir*, 16312, type (in Weir Herb.).

*A. macrodens* Coker, Elisha Mitchell Scientif. Soc. Jour. 36: 155. pl. 15, upper figs., pl. 31, f. 7-9. 1921.

Type: part of type in Mo. Bot. Gard. Herb.

"Forming irregular, often somewhat elongated patches about 2 mm. to 2 cm. long with well-defined margins and with much the aspect of *A. candidus*; surface minutely pulverulent, pure white, or pale cream when old and weathered; entire thickness only about 150-190  $\mu$ , the structure in section much obscured by very small crystals and the densely branched paraphyses. Basidia entirely embedded, 12-15  $\mu$  thick, irregular and bent, with 4 long, stout sterigmata, which only reach the surface by their tips. Spores commonly rectangular in outline, the surface set with a few large, irregularly placed, bluntly pointed spines which are up to 4  $\mu$  long; body of spore  $11\frac{1}{2}$ -15  $\times$   $18\frac{1}{2}$ -27  $\mu$ ."

On bark of living trees of *Fraxinus* and *Salix*. New Hampshire to North Carolina. May to December. Probably common.

"In passing the plant would be taken for *A. candidus*, but when examined is seen to be much thinner with the closely pressed margin not showing a dark underside. The spores are remarkable and unlike any others in the genus."

Specimens examined:

New Hampshire: Chocorua, *W. G. Farlow*, 1.

New York: Alcove, *C. L. Shear*, 1302, 1305; East Galway, *E. A. Burt*; Poughkeepsie, *W. R. Gerard*, 294, comm. by N. Y. Bot. Gard. Herb.

North Carolina: Chapel Hill, *W. C. Coker*, 4734, type, comm. by Univ. North Carolina Herb. (in Mo. Bot. Gard. Herb., 57427).

*A. subcruentatus* (Berk. & Curtis) Burt, Mo. Bot. Gard. Ann. 7: 237. 1920; Zeller, Mycologia 14: 179. 1922.

*Stereum subcruentatum* Berk. & Curtis, Am. Acad. Arts & Sci. Proc. 4: 123. 1858; Sacc. Syll. Fung. 6: 567. 1888.

Type: in Farlow Herb.

Fructifications small, sometimes effuso-reflexed, with the reflexed portion up to 1–2 mm. broad but more frequently resupinate, somewhat discoid, with the margin free all around and slightly elevated—in one fructification grown out so as to be attached by the vertex; upper side of reflexed pileus whitish at the margin, avellaneous nearer the substratum, somewhat radiately rugose, mealy; hymenium even, white or becoming pinkish buff; pulverulent; in section 500–1000  $\mu$  thick, not colored, composed of suberect, densely interwoven hyphae among a great amount of obscuring crystalline and mineral matter which is often in masses up to  $45 \times 15 \mu$ ; hyphae about 2  $\mu$  in diameter; hymenial portion up to 600  $\mu$  thick, composed of several layers, containing more or less numerous imbedded spores resembling the basidiospores; paraphyses simple, filiform, probably torulose, about 2–3  $\mu$  in diameter, basidiospores copious at surface of hymenium, hyaline, even, somewhat flattened on one side,  $12-18 \times 9-12 \mu$ .

Fructifications 2–15 mm. in diameter.

On bark of *Tsuga Sieboldii* in Japan and on bark of living trunks of *Picea sitchensis* and Douglas fir in California and Oregon. August and September.

*A. subcruentatus* has hymenial surface and spores suggestive of *A. disciformis* but is a very distinct species by having its fructifications effuso-reflexed when on the bark of standing trunks, by occurrence on conifers, thick and zonate hymenial portion, and presence of imbedded spores.

Specimens examined:

Oregon: Corvallis, S. M. Zeller, 1809 (in Mo. Bot. Gard. Herb., 56330).

California: Requa, W. H. Snell (Mo. Bot. Gard. Herb., 55860) and E. E. Hubert, comm. by J. R. Weir, 9946 (in Mo. Bot. Gard. Herb., 56229).

Japan: C. Wright, 265, type, Fungi U. S. Pac. Expl. Exp. (in

Farlow Herb.); Mt. Akayu, Prov. Echëgo, A. Yasuda, 22 (in Mo. Bot. Gard. Herb., 55659).

*A. succineus* Bresadola, Mycologia 17: 71. 1925.

Type: in Weir Herb.

Fructifications small, flattened, becoming disk-shaped by slight elevation of the margin, mouse-gray, pruinose, with the margin thick, entire, becoming free, under side pale; in section 500  $\mu$  thick, composed of densely arranged, ascending, thin-walled, hyaline hyphae 3–5  $\mu$  in diameter and of numerous gloeocystidia; gloeocystidia flexuous, 75–100  $\times$  8–10  $\mu$ ; paraphyses cylindric, of bottle-brush form, very numerous in the surface of the hymenium; basidia with 4 sterigmata; spores hyaline, even, ellipsoidal, 10  $\times$  5  $\mu$ .

Fructifications 1–3 mm. long, 1–2 mm. wide.

On old weathered wood of *Arbutus Menziesii*. Oregon. September.

*A. succineus* is readily recognized by its discoid fructifications which have both gloeocystidia and bottle-brush paraphyses.

Specimens examined:

Oregon: Grants Pass, J. R. Weir, 8682, type (in Weir Herb.).

*A. Zelleri* Burt, n. sp.

Type: in Burt Herb.

Fructifications resupinate, gregarious, erumpent, pulvinate, convex, pinkish buff to tawny; in section about 600  $\mu$  thick, composed of a broad layer of erect, somewhat interwoven hyphae 3–3½  $\mu$  in diameter, not incrustated, bearing a hymenial layer; no cystidia; gloeocystidia flexuous, 30–40  $\times$  4  $\mu$ , confined to the hymenial layer; basidia protruding, with 4 sterigmata; spores hyaline, even, 6–9  $\times$  4–4½  $\mu$ , copious.

Fructifications ½–1½ mm. in diameter, about ½ mm. thick—10 on an area about 1 cm. square.

On small dead twigs of a frondose species—perhaps *Alnus*. Oregon. December.

*A. Zelleri* may be recognized by its small, tawny, convex fructifications, erumpent from lenticels in the bark and having somewhat the aspect of a *Tubercularia*.

Specimens examined:

Oregon: Corvallis, S. M. Zeller, 6800, type.

#### CONIOPHORA

*Coniophora corrugis* Burt, n. sp.

Type: in Burt Herb.

Fructifications broadly effused, coriaceous-membranaceous, loosely attached, separable when moist, between fawn color and salmon-pink to russet-vinaceous, even when dry, somewhat wrinkled when moist, cracking in drying, the margin whitish, byssoid; in section 300  $\mu$  thick, not colored, with a broad layer next to the substratum of slender, loosely interwoven, thick-walled, nodose-septate hyphae about  $3\frac{1}{2}$ –4  $\mu$  in diameter, not incrusted, and with a very compact hymenial layer; no gloeocystidia nor cystidia; basidia with 4 sterigmata; spores even, 6–10  $\times$  4–7  $\mu$ , usually hyaline but when fully mature some at least are colored.

Fructifications 2–10 cm. long, 1–3 cm. wide.

On logs and dead limbs and on living trees of *Pinus ponderosa*, *Abies lasiocarpa*, *Picea Engelmannii*, *Juniperus*, and *Ribes*. In mountain forests. Wyoming to Colorado and British Columbia to Arizona. May to October. Common.

This species is most likely to be referred to *Corticium*, for it does not produce spores copiously and the few found in preparations may be full-sized and hyaline. It was 14 years after the type collection was received before it was demonstrated from a more mature specimen that the spores become colored finally. Several other collections with hyaline spores were received in the interval. *C. corrugis* may be recognized among our alpine species by its occurrence on the hosts stated, somewhat coriaceous, loosely attached, vinaceous fructifications, and large spores. The occurrence on living trees, as noted by Dr. Weir on Idaho specimens, is almost sufficient to identify this species when so found. *C. corrugis* seems related to *C. polyporoidea*.

Specimens examined:

Exsiccati: Baker, Pacific Slope Fungi, 3570, under the name *Corticium corrugis* Burt.

Wyoming: Jackson Hole, E. B. Payson, 2369 (in Mo. Bot. Gard. Herb., 57369).

Colorado: Arapahoe region, *B. M. Duggar* (in Mo. Bot. Gard. Herb., 63771); Tolland, *L. O. Overholts*, 1801 (in Mo. Bot. Gard. Herb., 43785, 54873), and *E. Bethel* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61447).

Idaho: St. Joe National Forest, *J. R. Weir* (in Mo. Bot. Gard. Herb., 43759, 63761); Victor, *E. B. Payson*, 2353, 2362 (in Mo. Bot. Gard. Herb., 57358, 57362).

British Columbia: Sidney, *J. Macoun*, 83 (in Mo. Bot. Gard. Herb., 55354).

Washington: Mt. Paddo, *W. N. Suksdorf*, 732, type.

Oregon: Austin, *J. R. Weir*, 5242 (in Mo. Bot. Gard. Herb., 55944).

California: Mt. Shasta, *E. B. Copeland*, in Baker, Pacific Slope Fungi, 3570; Santa Barbara, *W. H. Morse*, comm. by C. J. Humphrey, 860 (in Mo. Bot. Gard. Herb., 19314).

Arizona: Mt. Humphrey, near Flagstaff, *W. H. Long*, 21323 (in Mo. Bot. Gard. Herb., 55130); Peak Agassiz, near Flagstaff, *W. H. Long*, 19489 (in Mo. Bot. Gard. Herb., 44737, 55129).

*C. flavomarginata* Burt, n. sp.

Type: in Burt Herb.

Fructifications effused, thick, membranaceous, separable, when growing avellaneous, with the margin flavous, fading in the herbarium to pinkish buff with margin whitish, even or somewhat colliculose, velvety, the margin radiate-fimbriate; in section 500  $\mu$  thick, chamois-colored, becoming strатose, the hyphae suberect, densely arranged and interwoven, slightly colored, thin-walled, collapsing, 3–3½  $\mu$  in diameter, not incrusted, not nodose-septate; no cystidia nor gloeocystidia; spores slightly colored, even, cylindric, 12–15  $\times$  4½–6  $\mu$ .

Fructifications 1–3 cm. long, ½–3 cm. wide.

In crevices of the rough bark of large branches of *Quercus Garryana*. Washington. December and March.

The faded herbarium specimens of *C. flavomarginata* have aspect similar to those of *C. polyporoidea* but very different tissues and spores. The yellow margin of the thick, tan-colored fructifications composed of 3 strata, should make this species conspicuous in its region, and it is rather surprising that it has not been received except from Mr. Suksdorf.

Specimens examined:

Washington: Bingen, *W. N. Suksdorf*, 912, 913; *W. Klickitat County*, *W. N. Suksdorf*, 888, type, and 889.

***C. Sistotremoides*** (Schw.) Masee

*Thelephora Sistotremoides* Schweinitz, Naturforsch. Ges. Leipzig Schrift. 1: 109. 1822.—*Corticium suffocatum* Peck, N. Y. State Mus. Rept. 30: 48. 1879.

Type: under the name *Odontia Sistotremoides* of Curtis Herb. in Farlow Herb. and probably also in Berkeley Herb. at Kew and Schweinitz Herb.

I was misled as to *C. Sistotremoides* in my presentation of the species in Mo. Bot. Gard. Ann. 4: 249. 1917, by having to base the work on the descriptions formerly published. I have since found in Farlow Herb. a piece 12 × 6 mm. of the authentic specimen from Schweinitz Herb. This specimen is in excellent preservation; a preparation from it wholly changes the concept of *C. Sistotremoides*, whose description should become:—

Fructifications effused, thin, membranaceous, not fleshy, somewhat separable, becoming sepia in the herbarium, even, not papillate; in section 200–300  $\mu$  thick, colored like the hymenium, composed of colored hyphae 4–4½  $\mu$  in diameter, incrustated, not nodose-septate, loosely arranged and interwoven, rather irregular in form; no cystidia present or not distinguishable from immature basidia; spores colored, even, 9–10 × 6  $\mu$ .

Authentic specimen is on reddish brown coniferous bark.

The type specimen of *C. Sistotremoides* is darker than that of *C. suffocata* but not specifically distinct in my opinion. The account and distribution published for the latter in my earlier work applies to *C. Sistotremoides*. The descriptive matter published there for *C. Sistotremoides* should be struck out.

#### CRATERELLUS

***Craterellus subundulatus*** Peck, N. Y. State Mus. Bul. 67: 27. 1903.

*Thelephora subundulata* Peck, Torr. Bot. Club Bul. 22: 492. 1895; Sacc. Syll. Fung. 14: 214. 1899.

Type: in N. Y. Bot. Gard. Herb.

Fructifications gregarious or cespitose; pileus thin, coriaceous-fleshy, depressed or subinfundibuliform, sometimes split on one side, slightly floccose-squamulose or fibrillose, grayish or grayish brown, becoming light drab in the herbarium, wavy or lobed on the margin, the lobes often overlapping; stem equal, solid, colored like the pileus; hymenium uneven or shallowly radiately venose, decurrent, drying light pinkish cinnamon; no setae nor cystidia; basidia with 4 sterigmata; spores hyaline, even, flattened on one side,  $6-9 \times 4\frac{1}{2}-6 \mu$ .

Fructifications when dried  $1\frac{1}{2}-2$  cm. high; pileus 4–13 mm. in diameter; stem 8–14 mm. long,  $1-1\frac{1}{2}$  mm. thick.

On ground under trees of *Fagus*. New York and Delaware. July and August.

Peck noted this species as related to *C. sinuosus*, from which it differs in smaller size, solid and darker-colored stem, and slightly smaller spores. The fructifications are apparently plentiful when found, for some 30 fructifications of various sizes comprise each gathering.

Specimens examined:

New York: New York Botanical Garden, New York, *Peck & Earle, 1064* (in N. Y. Bot. Gard. Herb., Mo. Bot. Gard. Herb., and Burt Herb.).

Delaware: Wilmington, *A. Commons, 2718*, type (in N. Y. Bot. Gard. Herb.).

***C. turbinatus* Burt, n. sp.**

Type: in Mo. Bot. Gard. Herb.

Pileus solitary, stipitate, coriaceous-corky, cylindric-turbinate, solid, with the margin erect, lobed, thinner, and the disk depressed, drying snuff-brown to Prout's brown, glabrous, even; flesh drying pale Saccardo's umber, and with a fragrant, pronounced odor, and taste not noteworthy; lamellae decurrent, distant, narrow, about 1 mm. broad in the dried specimen, thin, about 2–4 mm. apart, not connected nor with venose interspaces, concolorous with the pileus, with colored conducting organs in the subhymental tissue; basidia simple, with at least 2 sterigmata demonstrated; spores slightly colored, even, globose,  $5-6 \mu$  in diameter; stem not sharply differentiated from the pileus, solid, contracting abruptly below, glabrous.

Fructifications 10 cm. high; pileus 7 cm. high, 3–4 cm. in diameter, with lobes up to 3 cm. long; stem 3 cm. long.

On stump of *Quercus*. California. March.

I have seen of this species only a dried specimen which was collected by Lieutenant McWhorter at a military training camp and I am not sure that the species may not be transferred eventually to perhaps *Paxillus* on account of the thin lamellae, which are, however, very narrow and distant. The species is distinguished by its thick, solid, snuff-brown, glabrous fructifications drying with fragrant odor, by globose, colored spores, and by occurrence on an oak stump.

Specimens examined:

California: near Base Hospital, Camp Stewart, Palo Alto, *F. P. McWhorter*, type (in Mo. Bot. Gard. Herb., 57269).

***Craterellus* (?) *Zelleri* Burt, n. sp.**

Type: in Mo. Bot. Gard. Herb.

Pileus fleshy when growing, thin, tubaeform, drying Prout's brown, with the erect, spreading margin deeply lacerate—in some cases to the stem and rarely splitting the stem on one side nearly to the ground; stem short, perforate, hollow, even, glabrous, Prout's brown; hymenium drying chamois to Naples yellow, even or reticulately plicate and with the larger pores subdivided into smaller, shallow pits more completely covering the under surface of the pileus but present also, although less well-developed, in patches on the upper side; no gloecystidia; basidia simple, with 6, or perhaps more, sterigmata; spores colored, even,  $8-9 \times 4\frac{1}{2}-6 \mu$ .

Fructifications up to 6 cm. high; pileus 3–4 cm. broad; stem 2 cm. long, 3 mm. thick.

On the ground in a dense forest. Oregon. March.

I have included this species in *Craterellus* because of the similarity of the subhymenial hyphae to the longitudinally arranged hyphae of the pileus and my inability to detect any evidence of an underlying hymenium. The aspect of the fungus is that of *Craterellus cornucopioides*. It is my opinion that this species will eventually be demonstrated to be a *Merulius* parasitic or saprophytic on the pilei of *Craterellus cornucopioides*. I know no *Merulius* to which this species is referable.

## Specimens examined:

Oregon: Corvallis, S. M. Zeller, 2093, type (in Mo. Bot. Gard. Herb., 58770).

## CYPHELLA

*Cyphella alboviolascens* (Alb. & Schw.) Karsten, Finska Vet.-Soc. Bidrag Natur och Folk 37: 133. 1882; 48: 400. 1889; Sacc. Syll. Fung. 6: 669. 1888; Bourdot & Galzin, Soc. Myc. Fr. Bul. 26: 225. 1910; Rea, Brit. Basid., 698. 1922; Pilat, Ann. Myc. 22: 211. 1924; Monogr. Cyphellacearum Czechoslov. 2: 45. pl. 1, f. 2. 1925.

*Peziza alboviolascens* Albertini & Schweinitz, Consp. Fung. 322. pl. 8, f. 4. 1805.—*Cyphella Curreyi* Berk. & Broome, Not. Brit. Fungi, 935, Ann. & Mag. Nat. Hist. III. 7: 379. 1861.

Fructifications gregarious or scattered, somewhat spherical at first, becoming flattened at the pore and somewhat hemispherical, white, densely villose, sessile or subsessile, soft throughout and easily sectioned, the margin inrolled; hairs white, rough, 6  $\mu$  in diameter, up to 120  $\mu$  long; hymenium concave, often violaceous; spores hyaline, even, flattened on one side, the convex side nearly subangular, 9–12  $\times$  6–9  $\mu$ .

Fructifications up to 1 mm. broad in American gatherings, up to 1/2 mm. high.

On dead twigs of *Syringa vulgaris* and *Sambucus*. Europe and Maine. July to October.

*C. alboviolascens* differs from *C. Tiliae* by softer fructifications, shorter, nearly 3-angled spores, and shorter hairs. *C. villosa* is closely related.

## Specimens examined:

Exsiccati: Sydow, Myc. Germ., 353.

Germany: Brandenburg, P. Vogel, in Sydow, Myc. Germ., 353.

Czecho-Slovakia: A. Pilat.

Maine: Kittery Point, R. Thaxter (in Mo. Bot. Gard. Herb., 58742, and Burt Herb.), comm. by W. G. Farlow (in Mo. Bot. Gard. Herb., 55573).

*C. fasciculata* (Schw.) Berk. & Curtis

Collections made on *Alnus oregana* extend the range of *C. fas-*

*ciculata* to Oregon. These specimens have the spores up to  $8-10 \times 5-6 \mu$ —twice the diameter of the spores of specimens of eastern United States—and somewhat larger basidia, but their other characters are so similar to those of eastern specimens that it now seems best to refer them to *C. fasciculata*.

These specimens are:

Oregon: Corvallis, *F. D. Bailey* (in Mo. Bot. Gard. Herb., 44144, 44199).

*C. galeata* (Schum.) Fr.

To my description of this species in Mo. Bot. Gard. Ann. 1: 362. 1915, it should be added that the spores are tawny, rough to verrucose,  $7-9 \times 6-8 \mu$ , or subglobose,  $8-10 \mu$  in diameter, according to Bourdot & Galzin, Soc. Myc. Fr. Bul. 26: 227. 1910, and Rea, Brit. Basid., 704. 1922.

*C. marginata* McAlpine, Fung. Dis. Stone-fruit Trees in Australia, 120. f. 229-232. 1902; Sacc. Syll. Fung. 17: 192. 1905; Zeller, Mycologia 14: 179. 1922.

Fructifications gregarious, fleshy-gelatinous, sessile, globose, somewhat ochraceous, drying drab and hoary, the pore distinct when full grown but nearly closed by the inrolled margin; hairs curved, honey-yellow, even, up to  $120 \times 4 \mu$ ; basidia simple,  $40-45 \times 6-8 \mu$ , with 4 sterigmata; spores hyaline, even,  $10-12 \times 6-7 \mu$ .

Fructifications usually  $\frac{1}{2}$  mm. in diameter, reported up to 1 mm. in diameter.

On small "die back" twigs of peach, almond, and apple. Australia and Oregon. July.

The small, grayish drab fructifications were very numerous on the small twigs received. Up to 30 were counted on an area 1 mm square.

Specimens examined:

Oregon: Corvallis, *S. M. Zeller*, 1830, 1831 (in Mo. Bot. Gard. Herb., 56334, 56335).

*C. muscicola* Fries, Syst. Myc. 2: 202. 1823; Hym. Eur. 663. 1874; Patouillard, Tab. Anal. Fung. 19. f. 31. 1883; Sacc. Syll. Fung. 6: 682. 1888.

*Phaeocyphella muscicola* (Fr.) Rea, Brit. Basid., 704. 1922; Pilat, Monogr. Cyphellacearum Czechoslov. 2: 67. text f. 16. 1925.

Fructifications gregarious, sessile or subsessile, cup-shaped, thin, membranaceous, the margin slightly downy, at length somewhat flaring; hymenium concave, even, snuff-brown with the copious spores; spores colored, even, spherical,  $6-6\frac{1}{2}\mu$  in diameter, so copious that they conceal the basidia.

Fructifications up to 1 mm. in diameter in American specimens, equalling the diameter in height.

On mosses. West Indies. November.

I have seen no European specimens of this species but the single gathering from Grenada agrees well with the concept of the species as more definitely described by the recent European mycologists. The occurrence on mosses, ashy white, open cups which become slightly flaring at the margin, and brown hymenium and spores are distinctive characters.

Specimens examined:

Grenada: *R. Thaxter*, comm. by W. G. Farlow, 5.

*C. patens* A. L. Smith, Linn. Soc. Bot. Jour. 35: 10. pl. 1, f. 6-8. 1911 1891; Sacc. Syll. Fung. 17: 192. 1905.

Type: in Brit. Mus. Herb. presumably.

"Sparsa, tubaeformis, dein elongata, fere ad basim fissa et expansa, margine superiore incurvata, circa 5 mm. longa, 2 mm. lata, extus flava tomentosa; hymenio brunneo, lamellis paucis angustis lamelliformis instructis; sporis globosis, minute asperulis,  $5\mu$  diam., hyalinis.

"On bark of tree, Morne Niger Maron [Dominica]. Sept. 1892. No. 323.

"This species seems to form a transition between the forms with a rugulose hymenium such as *C. Malbranchei*, Pat., and genera with regular gills such as *Lentinus*; the incurving margin and the shape of the immature specimens have decided the placing it in *Cyphella*."

*C. sessilis* Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructifications gregarious, sessile, closely adnate, white, very thin, membranaceous-fleshy, applanate, even, ceraceous, the margin slightly elevated, narrow, white, fibrillose; in section  $60\ \mu$  thick, not colored, with the hyphae ascending, thin-walled,  $2\text{--}3\ \mu$  in diameter; no gloeocystidia; basidia simple,  $12 \times 4\frac{1}{2}\ \mu$ , with 4 sterigmata; spores becoming pale-colored, even,  $6\text{--}7 \times 3\frac{1}{2}\text{--}4\ \mu$ .

Fructifications  $200\text{--}400\ \mu$  in diameter.

On fallen palm leaves. Bermuda. January.

The small, circular fructifications are rather near together and numerous, 17 having been counted on an area 1 cm. square. They are adnate by the whole under surface, with the hymenium flat and bordered by the narrow, white, fibrillose margin. Most of the spores are hyaline; some, however, are somewhat colored. The aspect is that of a minute Discomycete.

Specimens examined:

Bermuda: *H. H. Whetzel*, *Ajj*, type, comm. by R. Thaxter (in Mo. Bot. Gard. Herb., 58708), and duplicate from H. H. Whetzel.

*C. tela* (B. & C.) Masee, Jour. Myc. 6: 179. pl. 7, f. 12, 13. 1891.

*Peziza tela* Berk. & Curtis, Grevillea 3: 156. 1875.—*Tapesia tela* (B. & C.) Sacc. Syll. Fung. 8: 373. 1889.—An *Peziza Dae-dalea* Schw.?

Type: in Farlow Herb. and Kew Herb., under the name *Peziza tela*.

"Gregarious on a dense white subiculum; cups minute,  $150\text{--}180\ \mu$  diameter, subglobose; mouth at first small, becoming expanded, but the acute margin always remains more or less incurved; externally blackish brown, frosted with glistening crystals of oxalate of lime; hymenium concave, even, naked, blackish brown; basidia clavate, tetrasperous; spores subglobose or broadly pyriform, smooth, pale brown, 7 by  $5\ \mu$ .

"On wood. Lower Carolina. (Type in Herb. Berk., Kew, No. 7724).

"The present species, owing to its dark color and gregarious habit, also being furnished with a dense, white, broadly effused,

superficial mycelium, suggests the genus *Peziza* when examined under a low power, but is a true *Cyphella*."

I have examined superficially the type of *Peziza tela* B. & C. in Farlow Herb. and the aspect is so similar to that of *Solenia poriaeformis* that Masee's statement about the spores of *P. tela* being colored should be confirmed. I was unable to make such examination of the spores. The type of *Peziza Daedalea* Schw. has the same aspect as *P. tela*.

**C. Thaxteri** Burt, n. sp.

Type: in Burt Herb.

Fructifications very small, gregarious, stipitate, cup-shaped with the mouth open, drying between avellaneous and light pinkish cinnamon, merely farinose under a lens but really hairy when highly magnified, the margin inrolled when dry; hairs Isabella color, even, flexuous,  $25-30 \times 4-4\frac{1}{2} \mu$ ; hymenium Isabella color; basidia simple,  $16 \times 4-6 \mu$ ; spores ochraceous, even,  $7-8 \times 5 \mu$ ; stem central, cylindric, with surface like the pileus.

Fructifications about  $\frac{1}{4}$  mm. in diameter; stem about  $140 \mu$  long,  $60-80 \mu$  thick.

On bark. West Indies. November.

About 30 of the small, goblet-shaped fructifications are present on an area about  $\frac{1}{2}$  cm. long,  $\frac{1}{4}$  cm. wide. The farinose surface of the exterior of the cups and stem is probably due to granular matter on the hairs, but no trace of such matter is found when the hairs are examined in permanent glycerine mounts by the compound microscope.

Specimens examined:

Grenada: Grand Etang, *R. Thaxter*, type, comm. by W. G. Farlow.

#### HYPOCHNUS

**Hypochnus albus** Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructifications effused, small, circular, closely adnate, very thin, snow-white, even, velutinous under a lens with the large cystidia, not shining, the margin similar; in section  $30-60 \mu$  thick, not colored, composed of loosely interwoven, hyaline hyphae  $1\frac{1}{2}-2 \mu$  in diameter, not nodose-septate, incrusting in the sub-

hymenium; no gloeocystidia; cystidia somewhat incrustated,  $75-120 \times 9-15 \mu$ , of greatest diameter at the base, usually seated on the incrustated zone, more rarely on the substratum; paraphyses delicate, branching in antler-shaped form; spores hyaline, globose,  $7\frac{1}{2} \mu$  in diameter, even at first, finally minutely echinulate, borne 4 to a basidium.

Fructifications 1-4 mm. in diameter, 3 present on an area  $12 \times 15$  mm.

On bark of a frondose species among mosses and lichens in a moist, virgin forest. Mexico. January.

The small, white fructifications, conspicuous cystidia, antler-shaped paraphyses, and echinulate spores form a unique group of characters distinguishing *H. albus*. But for the echinulate spores this species could have been placed in *Peniophora* next to *P. phyllophila*.

Specimens examined:

Mexico: Orizaba, Nuevo, W. A. & E. L. Merrill, 749a, type, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54654).

*H. epiphyllus* (Schw.) Burt, n. comb.

*Hydnum epiphyllum* Schweinitz, Am. Phil. Soc. Trans. N. S. 4: 163. 1832.—*Hypochnus granulosus* (Peck) Burt, Mo. Bot. Gard. Ann. 3: 218. text f. 9. 1916, where additional synonymy is given.

Type: in Farlow Herb. from Schweinitz Herb. and probably in Schweinitz Herb. and at Kew, under the name *Hydnum epiphyllum*.

In Curtis Herb. of Farlow Herb. there are specimens of this species under the name *Hydnum epiphyllum*, collected in Alabama, Peters, 1124, and also under the herbarium name, *Odontia grandinia*, collector Peters, 1116.

*H. filamentosus* Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructifications effused, small, closely adnate, very thin, hypoch-noid-arachnoid, Mars-brown but this color completely soluble in dilute potassium hydrate solution; hymenium not continuous and showing many ends of fibrils under a lens, the margin thinning out;

in section up to  $90\ \mu$  thick in some places but with much thinner connecting portions and mycelial strands in the same section, colored but wholly bleached by action of potassium hydrate solution, the hyphae incrusted,  $4\text{--}5\ \mu$  in diameter, often together in rope-like strands up to  $18\ \mu$  in diameter with crystalline matter on the outer surface of the strands; basidia  $15 \times 5\ \mu$ , with 4 sterigmata, protruding from the covering matter of the strands, few observed; spores attached to the basidia are hyaline (after treatment of the sections with potassium hydrate solution), subglobose, rough,  $3\ \mu$  in diameter; no cystidia.

Fructifications 1–4 mm. in diameter, somewhat confluent for a length of 2 cm.

On small fragments of blackened, decaying wood of a frondose species—apparently on the under side next to the ground. Cuba. March.

The specimen upon which the description is based is scantily developed; collections with normal continuous hymenium will probably eventually be made. The distinguishing characters seem to be Mars-brown color, complete bleaching by potassium hydrate solution, numerous rope-like strands, hyphae thin-walled, incrusted, collapsing, and small subglobose spores.

Specimens examined:

Cuba: locality not stated, C. G. Lloyd, 424, type (in Mo. Bot. Gard. Herb., 55174).

#### *H. fumosus* Fr.

To the synonymy of this species in Mo. Bot. Gard. Ann. 3: 239. 1916, should be added *Odontia tenuis* Peck, N. Y. State Mus. Rept. 44: 134. 1891. Study of the type in N. Y. State Mus. Herb. shows the outer surface overrun with the intricate, branching, anastomosing, mycelial threads, and the spores white, minutely echinulate,  $4\text{--}4\frac{1}{2} \times 2\frac{1}{2}\ \mu$ —both characteristic of *H. fumosus*.

#### *H. pallidofulvus* (Peck) Burt, n. comb.

*Zygodesmus pallidofulvus* Peck, N. Y. State Mus. Bul. 105: 30. 1906; Sacc. Syll. Fung. 22: 1358. 1913.—*Hypochnus subferugineus* Burt, Mo. Bot. Gard. Ann. 3: 210. 1916.

Study of the type of *Zygodesmus pallidofulvus* in N. Y. State Mus. Herb. shows the species to be an *Hypochnus* specifically the same as *H. subferrugineus*, which therefore becomes a synonym.

**H. Rhacodium** Berk. & Curtis in herb. under *Stereum*, n. sp.

Type: in Mo. Bot. Gard. Herb., Farlow Herb., and Kew Herb.

Fructifications effused, very thick, crust-like and brittle when dry and fuscous or dusky drab externally and throughout, colliculose, not cracked, the margin unknown; in section  $1\frac{1}{2}$ –3 mm. thick, fuscous, composed (1) of a layer  $\frac{1}{2}$ –2 mm. thick next to the substratum, fibrous and tow-like, composed of loosely interwoven, thick-walled, rigid hyphae up to 6  $\mu$  in diameter, not incrustated, rarely nodose-septate, and (2) of a crust-like hymenial portion, composed of 1 or 2 layers with hyphae erect, densely crowded, colored, 4–5  $\mu$  in diameter, not incrustated, not nodose-septate, bearing basidia; no gloeocystidia nor cystidia; basidia with at least 2 sterigmata demonstrated; spores concolorous with the hyphae, aculeate-tuberculate, somewhat angular, the body 6–7  $\mu$  in diameter.

Fructifications probably large—known from fragments up to 2 cm. long,  $\frac{1}{2}$  cm. wide.

On under side of decaying logs of apparently a frondose species. Pennsylvania.

*H. Rhacodium* has the aspect of a thick, dark fuscous, effused *Hypoxydon*. The hyphae of the under layer are brittle when dry so that the hymenial crust is very likely to split away from the substratum through this brittle layer. The specimens in Kew and Farlow Herbaria, communicated by Michener through Curtis, consist of the hymenial crust. Michener's own specimen, now in the Mo. Bot. Gard. Herb., has the whole fructification to the woody substratum. This species is related to *H. umbrinus*.

Specimens examined:

Pennsylvania: *E. Michener*, type, No. 1435 to M. A. Curtis (in Mo. Bot. Gard. Herb., 5095, in Farlow Herb., and Kew Herb. as Curtis Herb., 4061, under the herbarium name *Stereum Rhacodium*).

**H. subviolaceus** Peck, N. Y. State Mus. Rept. 47: 151. 1894; Sacc. Syll. Fung. 11: 130. 1895.

Type: in N. Y. State Mus. Herb. and Mo. Bot. Gard. Herb.

Fructifications effused, closely adnate, very thin, violet-gray at first, becoming drab in the herbarium, even, velutinous, the margin whitish at first, fibrillose; in section  $90\ \mu$  thick, colored, composed of suberect and interwoven, densely arranged, thin-walled hyphae  $2\ \mu$  in diameter, some hyaline and many colored and bushy-branched; spores nearly hyaline, globose, rough or minutely aculeate,  $4-4\frac{1}{2}\ \mu$  in diameter.

Fructification  $2\frac{1}{2}$  cm. long,  $1\frac{1}{2}$  cm. wide, broken off at both ends and on one side.

On badly decayed coniferous wood. Canada. September.

The aspect of *H. subviolaceus* is not hypochnoid but rather that of a very thin *Coniophora*. The occurrence on decorticated coniferous wood, drab color, system of bushy-branched, colored tissue in addition to, and somewhat masking, the usual hyphae, and the small nearly hyaline spores should aid in recognition of this species.

Specimens examined:

Canada: *J. Macoun*, type (in N. Y. State Mus. Herb.), and comm. by N. Y. State Mus. Herb., T 34 (in Mo. Bot. Gard. Herb.).

**H. umbrinus** (Fr.) Quelet, Fl. Myc. 2. 1888.

The above combination has priority over that in Mo. Bot. Gard. Ann. 3: 213. 1916, according to Wakefield, Brit. Myc. Soc. Trans. 6: 132. 1919. I have not access to a copy of the Quelet.

Upon reexamination of the sections in my preparation from the type of *Thelephora arachnoidea* Berk. & Br., I think that this is a *Septobasidium* as stated by Bresadola, Ann. Myc. 14: 241. This species should therefore be struck out in my work where given as a synonym of *H. umbrinus*.

**Caldesiella viridis** (Alb. & Schw.) Pat. Essai Taxon. 120. 1900; Rea, Brit. Basid. 651. 1922; Bourdot & Galzin, Soc. Myc. Fr. Bul. 40: 128. 1924.—*Odontia viridis* (Alb. & Schw.) Quelet, Fl. Myc. 434. 1888; Bresadola, I. R. Accad. Agiati Atti III. 3: 97.

1897.—*Hydnum viride* (Alb. & Schw.) Fries, Syst. Myc. 1: 421. 1821; Hym. Eur. 614, 1874.

This species has hypochnoid texture, color deep grape-green at first, fading to Vetiver green in the herbarium, and minutely echinulate spores slightly colored, about  $3\frac{1}{2}$ – $5 \times 3$ – $3\frac{1}{2}$   $\mu$ . I have seen American collections from Vermont, Missouri, and British Columbia. The fructifications are sometimes so even that they might be referred to *Hypochnus*.

#### PENIOPHORA

*Peniophora populnea* (Peck) Burt, n. comb.

*Stereum populneum* Peck, N. Y. State Mus. Rept. 47: 145. 1894.

Type: in N. Y. State Mus. Herb. and Burt Herb.

Fructifications effused, often confluent, adnate, rather thin, small pieces separable when moist, brown tinged with liver color when fresh, becoming between Natal brown and Mars brown in the herbarium, not shining, somewhat colliculose, contracting in drying and cracking into angular masses  $\frac{1}{2}$ – $1\frac{1}{2}$  mm. in diameter, the margin thin, radiate-dentate, pale, drying slightly free in some places; in section 250–300  $\mu$  thick, colored, 2-layered, with a broad layer next to the substratum composed of longitudinally arranged, crowded and densely interwoven, nearly hyaline hyphae  $2\frac{1}{2}$ –3  $\mu$  in diameter, and with an equal, colored hymenial layer composed of erect, densely crowded and interwoven, brownish hyphae and brownish paraphyses and cystidia; no gloeocystidia; cystidia heavily incrustated, very large, up to  $60$ – $100 \times 20$ – $25$   $\mu$ , at the surface of the hymenium but not protruding; paraphyses hair-like, colored, slender,  $1$ – $1\frac{1}{2}$   $\mu$  in diameter, branching at or near the tips into 2 or 3 short branches; basidia cylindric,  $70$ – $90 \times 3$ – $4$   $\mu$ , probably simple and with 4 very short sterigmata; spores hyaline, even,  $12$ – $15 \times 4$   $\mu$ .

Fructifications  $3\frac{1}{2}$  cm. long, 3 cm. wide.

On bark of decaying *Populus tremuloides*. New York. August.

*P. populneum* should be recognized by its occurrence on poplar logs, liver color externally and colored substance, cracked hymenium, very large cystidia, and long and slender basidia. The

layer of hyphae longitudinally arranged along the substratum and the very long and slender basidia have made me question whether this species is not an *Auricularia* but I have been unable to demonstrate transverse septation in any of the basidia.

Specimens examined:

New York: Ray Brook, Essex County, *C. H. Peck*, type (in N. Y. State Mus. Herb., under the name *Stereum populneum*, and in Burt Herb.).

#### STEREUM

*Stereum aculeatum* (B. & C.) Burt, n. comb.

*Thelephora aculeata* Berk. & Curtis, *Grevillea* 1: 149. 1873; Sacc. Syll. Fung. 6: 523. 1888; Burt, Mo. Bot. Gard. Ann. 7: 232. 1920.

I now refer to *S. aculeatum* a small specimen received since the publication of the part on *Stereum*. This specimen has the component fructifications central-stemmed, laterally confluent, and resembling in aspect *S. pallidum*, but differing from the latter by the presence of gloeocystidia and the absence of cystidia; the spores are hyaline, even,  $5 \times 3\frac{1}{2}$ –4  $\mu$ .

Fructifications 4 cm. high,  $2\frac{1}{2}$  cm. wide.

On the ground. South Carolina and Missouri. June and August.

Specimens examined:

South Carolina: Santee Swamp, *H. W. Ravenel*, 764, type (Curtis Herb., 2009, in Kew Herb., and Farlow Herb.); Clemson College, *P. H. Rolfs*, 1835.

Missouri: locality not stated, *Dr. Emig*, comm. by J. R. Weir, 18820 (in Mo. Bot. Gard. Herb., 58744, and Burt Herb.).

*S. atrorubrum* Ell. & Ev. Acad. Nat. Sci. Philadelphia Proc. 1890: 219. 1890; Sacc. Syll. Fung. 9: 225. 1891.

Type: in N. Y. Bot. Gard. Herb., and a fragment in Burt Herb.

"Fan-shaped or reniform, 1–3 cm. broad and long, coriaceous, thin, narrowed behind into a sessile base, hollow at first (about the same color as *S. complicatum*) and tomentose-pubescent with a few narrow faint zones, but when mature of a dull dark red (about the color of the pileus of *Pol. lucidus*) with the surface

glabrous and densely radiate-rugose, margin lobed and crisped and in some specimens proliferous, young hymenium yellow, becoming when old brick color when moist, paler when dry. In the mature state the 3-5 concentric zones are more distinct and slightly elevated. The specimens roll up in drying and become hard and brittle."

We have but very few strictly sessile or reniform species of *Stereum*, although sessile specimens of common effuso-reflexed species were described as distinct species; more collections of *S. atrorubrum* are needed to clear up this important character in this case. The upper surface of the fragment seen by me is now dusky brown to bone-brown, glabrous, shining, strongly radiately rugose and shallowly concentrically sulcate; hymenium even, glabrous, avellaneous; in structure about 800  $\mu$  thick, composed of (1) an intermediate layer of longitudinal, densely arranged, thick-walled, rigid hyphae 3-3½  $\mu$  in diameter, (2) bordered on the upper side by an opaque, brown layer 60  $\mu$  thick which gives the color to the pileus, and (3) curving on the lower side into a hymenial layer 300  $\mu$  thick; no cystidia, gloecystidia, nor conspicuous conducting organs; spores up to  $7 \times 2-2\frac{1}{2}$   $\mu$  present but may not belong for only 2 seen.

The date of the collection—May—and appearance of the hymenium suggest a specimen of the preceding season which has held over through the winter and may have had somewhat different characters when growing. The very dark-colored, strongly radiating rugose upper side of the pileus is noteworthy.

Specimens examined:

British Columbia: on old logs, *J. Macoun*, 86, type, a fragment examined.

*S. radicans* (Berk.) Burt, Mo. Bot. Gard. Ann. 7: 108. pl. 3, f. 16. 1920.

In a collection of this species from Porto Rico, in Mo. Bot. Gard. Herb., 7585, the spores have become slightly colored, showing that this species belongs in *Thelephora*. The species is really an intermediate between *Stereum* and *Thelephora*, having the dense, intermediate layer of *Stereum* and also vesicular gloecystidia in the hymenial layer. The spores are still hyaline in 3 of the 4 gatherings which I have studied.

**S. Underwoodii** Burt, n. sp.

An *Stereum induratum* Berkeley, Linn. Soc. Bot. Jour. 16: 44. 1877?

Type: in Burt Herb.

Fructifications corky, not hard nor indurated, adnate, resupinate and effused, sometimes narrowly reflexed, the reflexed surface drab in the herbarium where young, nearly black where oldest, somewhat concentrically sulcate, fibrillose, not shining, the margin entire; hymenium warm buff to honey-yellow in the herbarium, even, velutinous; in section  $\frac{1}{2}$ –2 mm. thick, colored warm buff to tawny olive throughout, stratose, composed of densely interwoven, colored, rigid hyphae  $1\frac{1}{2}$ – $2\frac{1}{2}$   $\mu$  in diameter, highly branched and with many branches of more or less antler-shaped form; no cystidia, gloecystidia, conducting organs nor imbedded spores; spores hyaline, even,  $10 \times 5$   $\mu$  but may not belong, only 1 seen.

Fructifications effused over areas 6 mm.–5 cm. long, 6 mm.–2 cm. wide, the reflexed margin 2–3 mm. broad.

On bark of *Xolisima*. West Indies and Brazil. September and April.

This species has the antler-shaped branching of hyphae characteristic of *Hypochnus pallescens*, *H. peniophoroides*, *Asterostromella dura*, and *Stereum duriusculum*. The narrowly reflexed margin is well shown by the specimens from Jamaica and is important for location of *S. Underwoodii* in *Stereum*. The Brazilian specimen was received from Bresadola under the name *Stereum induratum* Berk.—a species known only from a single collection made by the Challenger Expedition in the East Indies and described as pileate, conchiform, 3 inches across, and very hard. *S. Underwoodii* is soft, not at all hard, and does not turn the edge of the razor in sectioning. I have not yet been able to study the type of *S. induratum*.

Specimens examined:

Jamaica: base of John Crow Peak, L. M. Underwood, 2432, type, comm. by N. Y. Bot. Gard. Herb.; Cinchona, L. M. Underwood, 3128, comm. by N. Y. Bot. Gard. Herb.

Brazil: Blumenau, Dr. Möller, comm. by Bresadola under the name of *Stereum induratum*.

## THELEPHORA

*Thelephora lutosa* Schw. See Burt, Mo. Bot. Gard. Ann. 1: 216. 1914.

This rare species has been known only from the type collection from Salem, North Carolina. There is now an additional gathering by Dr. W. A. Murrill, 404, from Mountain Lake, Virginia, July 8-14, of which a specimen is in the Mo. Bot. Gard. Herb. The specimen grew in clay ground in mixed woods; a fragment of buried rotten wood is attached to the short, radicated base. This specimen does not necessitate any change in the description. In the dried fructification the soft, fine pubescence of the upper side, and cream color externally and within are distinctive characters. The older portion of the hymenium has assumed a light drab color with the spores, which are slightly colored, angular,  $4-6 \times 4-4\frac{1}{2} \mu$ .

## TULASNELLA

*Tulasnella calospora* (Boud.) Juel, K. Svenska Vet.-Akad. Bihang till Handl. Afd. III. 23<sup>12</sup>: 23. 1897; Bresadola, Ann. Myc. 1: 114. 1903.

*Prototremella calospora* Boudier, Jour. de Bot. 10: 85. text f. 1-4. 1896.—An *Tulasnella rosella* Bourdot & Galzin, Soc. Myc. Fr. Bul. 39: 263. 1924?

Fructifications effused, very thin, waxy, whitish in the herbarium, somewhat perforate, the margin thinning out; in section 100-150  $\mu$  thick, with the hyphae about 3  $\mu$  in diameter, thin-walled; spores hyaline, even, fusiform, flexuous,  $20-27 \times 3-3\frac{1}{2} \mu$ , often with a lateral branch.

Covering as a cluster of small fructifications the terminal portions of dead mosses on an area 2 cm. long, about 1 cm. wide.

On wood in Europe, on dead mosses in Maine.

*T. calospora* has fructifications rather more membranaceous than those of our other species, and longer spores, which are noteworthy by having frequently a branch stand out at right angles from the body of the spore. I figured such a branched spore in Mo. Bot. Gard. Ann. 6: 258. text f. 3. 1919.

Specimens examined:

Maine: Kittery Point, *R. Thaxter* (in Mo. Bot. Gard. Herb., 57477).

## VELUTICEPS

*Veluticeps fusca* Humphrey & Long, n. sp.

Type: in Humphrey Herb. and Mo. Bot. Gard. Herb.

Fructifications coriaceous-corky, resupinate, effuso-reflexed, or conchiform, laterally confluent, with the reflexed part somewhat concentrically sulcate, tomentose, at first nearly auburn or tawny, finally becoming dusky drab and weathering hoary, the margin clay-colored when young, entire, becoming somewhat crisped; hymenium plane, avellaneous, velutinous, thickly studded with protruding fascicles of colored hyphae which have the appearance of teeth of a *Hydnum* when little magnified; in section 1–3 mm. thick, wood-brown, composed of densely arranged, suberect and interwoven, rigid, colored hyphae  $3\text{--}4\frac{1}{2}\mu$  in diameter, not incrustated, not nodose-septate; hyphal fascicles  $12\text{--}25\mu$  in diameter, protruding through and beyond the hymenium up to  $90\text{--}150\mu$  and composed of flexuous, parallel, colored hyphae  $3\frac{1}{2}\text{--}7\mu$  in diameter; basidia simple, with 4 slender, conspicuous sterigmata up to  $6\mu$  long; spores white, even, usually unequilateral,  $9\text{--}10 \times 3\frac{1}{2}\text{--}4\mu$ .

Confluent over areas up to 12 cm. long and 2–3 cm. wide, the reflexed margin 6–12 mm. broad.

On decorticated, decaying logs of *Pinus ponderosa*. Washington, Arizona, and New Mexico. October.

It is probable that *V. fusca* occurs more frequently than its few, widely separated, recorded stations indicate, for gatherings are likely to be referred by collectors to *Hydnum* on account of the superficial resemblance of the hymenial fascicles to teeth of *Hydnum*. The fructifications are large and conspicuous, somewhat resembling in aspect those of *Stereum sulcatum* but quite distinct by the hymenial fascicles.

Specimens examined:

Washington: Spokane, J. R. Weir, 611 (in Mo. Bot. Gard. Herb., 36749).

Arizona: Fort Valley Experiment Station, near Flagstaff, W. H. Long, 19688, type (in Mo. Bot. Gard. Herb., 20084).

New Mexico: Gila National Forest, near Pinos Altos, G. G. Hedgcock & W. H. Long, 9851, comm. by C. J. Humphrey, 2572 (in Mo. Bot. Gard. Herb., 11200).

## AURICULARIACEAE

## SEPTOBASIDIUM

*Septobasidium mexicanum* Sydow, Ann. Myc. 18: 154. 1920; Sacc. Syll. Fung. 23: 567. 1925.

"Omnino resupinatum, matrici arcte adhaerens, tenuissimum, centro circiter  $\frac{1}{2}$ – $\frac{3}{4}$  mm. crassum, ca. 1–3 cm. longum, 1–2 cm. latum, ferrugineum, centro dein cinereo-ferrugineum, ad ambitum anguste sed distincte albido-cinereo fimbriatum, leve, haud rimosum; contextus ex hyphis flavo-brunneis crasse tunicatis 3–4  $\mu$  crassis sparse ramosis remote septatis compositus; basidia non visa.

"Hab. ad ramos vivos *Cupressi* spec., Mexico, 1918, leg. Reiche no. 46."

*S. pedicellatum* Patouillard, Jour. de Bot. 6: 61. text f. 1892; Burt, Mo. Bot. Gard. Ann. 3: 323. 1916.

Type: in Museum of Paris.

Since my account of this species I have studied specimens of both the Cuban collections distributed by C. Wright under the name *Thelephora pedicellata* and find that the collection, C. Wright, 798, distributed in Wright, 'Fungi Cubenses Wrightiani' is in condition to afford the structural details figured by Patouillard and therefore must be the type distribution of his species.

The general description of this species, which could not be given before, is:

Fructifications resupinate, dry, avellaneous, pulverulent, occurring in small, interrupted patches, each about 2–3 mm. in diameter; in structure 500–600  $\mu$  thick, colored, stratose, composed of 2 strata, each consisting of a hymenial crust supported on pillars or pedicels about 15  $\mu$  in diameter, with their component hyphae about 3  $\mu$  in diameter; probasidia borne at the surface of the hymenial layer.

On living bushes among, and on, mosses and lichens. Cuba.

*S. pinicola* Snell, Mycologia 14: 58. pl. 11–13. 1922; Overholts, Mycologia 16: 233. 1924.

Type: in Snell Herb., Mo. Bot. Gard. Herb., and Forest Path. Herb.

"Fructification resupinate, effused, coriaceous, in general circular in shape, more or less concentrically sulcate, separable from substratum, roughly tomentose to strigose, army-brown to Natal-brown when dry, the margin light drab to cinnamon-drab, strigose; in structure lacunar, spongy, 1–1.8 mm. thick, individual hyphae under the microscope clay-color to tawny olive, thick-walled, even, 3–3.5  $\mu$  in diameter, loosely interwoven so as to form a spongy structure with locules, branching to form a lighter colored hymenium about 80–110  $\mu$  thick; probasidia terminal or lateral, hyaline, pyriform to subglobose, 10–15  $\times$  15–17  $\mu$ , throughout hymenium; spore-bearing organs straight, hyaline, 54–66  $\times$  6–7  $\mu$ , 3-septate, growing from probasidia and projecting above hymenium; spores hyaline, simple, curved, 14–17.5  $\times$  3–3.5  $\mu$ , borne singly from each of 3 cells of spore-bearing organ, acropetally as far as observed.

"Fructification 3–60 mm. but more commonly 10–35 mm. in diameter, 1–1.8 mm. thick."

On bark of living *Pinus Strobus* in New England, New York, and Pennsylvania, and probably co-extensive with the habitat of this host; also on *Pinus monticola* in Idaho. Found sporulating after prolonged moist and rainy period in August.

**S. Spongia** (Berk. & Curtis) Patouillard, Soc. Myc. Fr. Bul. 16: 181. 1900; Burt, Mo. Bot. Gard. Ann. 3: 339. text f. 11. 1916.

From several collections of this species made by Dr. J. A. Stevenson in Porto Rico and San Domingo, additional characters have been secured for completion of the description.

Fructifications on leaves and stems of *Citrus decumana* and *C. sinensis* dry, warm sepia to Benzo-brown; probasidia at the hymenial surface of a few filaments are hyaline, globose, 9  $\mu$  in diameter; spore-bearing organs straight, cylindric-clavate; spores simple, hyaline, curved, 9–10  $\times$  3–4  $\mu$ , observed on the outer cells of the organs.

Sterile fructifications have been received from Dr. A. T. Speare, collected on *Citrus*, at Okeechobee, Florida.

## EXOTIC SPECIES

*S. album* Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructifications resupinate, effused, adnate, thick, fleshy, white, somewhat colliculose, pulverulent, contracting in drying and forming a few large fissures at 2–3 mm. apart, the margin somewhat tomentose; in structure 600–700  $\mu$  thick, not colored, composed of densely interwoven and ascending, even-walled, hyaline hyphae 3–4  $\mu$  in diameter, occasionally nodose-septate, not incrustated; no probasidia seen; spore-bearing organs straight, 3-septate,  $75 \times 6 \mu$ , confined to the outer 150  $\mu$  of the hymenium, only rarely reaching the surface and protruding; spores simple hyaline, even,  $10\text{--}12\text{--}15 \times 7\text{--}9 \mu$ , borne singly on the outer 3 cells of the spore-bearing organs so far as observed; surface of the hymenium composed of slender, hyaline, matted and coiled paraphyses or hyphal branches 2  $\mu$  in diameter.

Fructifications 1–3 cm. long,  $1\text{--}1\frac{1}{2}$  cm. wide.

On bark of dead, fallen branches of *Nothofagus*. New Zealand. December.

*S. album* somewhat resembles *Corticium portentosum* and is exceptional, if there is no error in the collector's data, by its occurrence on dead, fallen branches. The hymenial surface of coiled paraphyses, absence of probasidia, and hyphae extending from all parts of the substratum into the fructification without consolidation into supporting pillars are additional characters for recognition of the species.

Specimens examined:

New Zealand: Queenstown, Otago, *G. H. Cunningham*, 542, type, comm. by J. R. Weir (in Mo. Bot. Gard. Herb., 59315).

*S. cinnamomeum* Burt, n. sp.

Type: in Farlow Herb. and Mo. Bot. Gard. Herb.

Fructifications resupinate, effused, dry, hypochnoid, small pieces separable when moist, Brussels brown, somewhat colliculose, somewhat velutinous, the margin concolorous, with surface irregular, somewhat raduloid; in section 210  $\mu$  thick, colored, stratose, consisting of 2 strata, each composed of suberect, loosely interwoven, rigid hyphae 3  $\mu$  in diameter, colored

like the hymenium, not incrustated, not nodose-septate; probasidia spherical,  $6\ \mu$  in diameter; spore-bearing organs numerous, cylindric,  $30 \times 6\ \mu$ ; spores simple, hyaline, curved,  $13 \times 3\frac{1}{2}\ \mu$ .

Fructifications probably large, for the one seen covered an area  $7\frac{1}{2}$  cm. long, 5 cm. wide.

On moss-covered bark of an apparently frondose species. Chile. December.

Distinguished by bright Brussels brown color, stratose structure consisting of 2 strata in the type, and absence of supporting pillars for the hymenial crust. The hyphae arise uniformly into the fructification from all points in the substratum.

Specimens examined:

Chile: Corral, *R. Thaxter*, b, type (in Farlow Herb., and Mo. Bot. Gard. Herb., 57896).

*S. spiniferum* Burt, n. sp.

Type: in Farlow Herb. and Mo. Bot. Gard. Herb.

Fructifications resupinate, effused, adnate, coriaceous, blackish brown (3) in the herbarium, not shining, surface somewhat veined and with the veins extended into occasional, cylindric teeth or spines 2–5 mm. long,  $2/5$  mm. in diameter, extending obliquely from the veins and the hymenial surface in the marginal region, the margin fimbriate; in section  $400\ \mu$  thick, colored, composed of loosely interwoven, rigid hyphae  $4\frac{1}{2}\ \mu$  in diameter, concolorous with the fructification; probasidia  $9\text{--}12\ \mu$  in diameter; no spores nor spore-bearing organs seen.

Fructification 9 cm. long, surrounding a living hardwood branch 12 mm. in diameter.

On living, frondose branches. Chile. November.

The veined hymenium of *S. spiniferum* locates this species in the group with *S. retiforme*. The extension of the veins in the form of large hydroid teeth is a unique character, if constantly present in future collections.

Specimens examined:

Chile: San Pedro, Concepcion, *R. Thaxter*, a, type (in Farlow Herb., and Mo. Bot. Gard. Herb., 57895).

## TREMELLACEAE

## EICHLERIELLA

*Eichleriella mexicana* Burt, n. sp.

Type: in Mo. Bot. Gard. Herb. and N. Y. Bot. Gard. Herb.

Fructifications coriaceous, separable, effuso-reflexed, with the reflexed portion narrow, snuff-brown, and concentrically sulcate on the upper side, fibrillose, the margin entire; hymenium light vinaceous-cinnamon in the herbarium, pruinose, even; in section 600  $\mu$  thick, (1) with the layer at surface of pileus and next to substratum up to 100  $\mu$  thick and having its hyphae Saccardo's umber, loosely interwoven, thick-walled, 3–4  $\mu$  in diameter, and (2) with a broad intermediate layer composed of densely interwoven, hyaline hyphae 4  $\mu$  in diameter which passes into (3) the hymenial layer composed of basidia and slender branched paraphyses bearing granules; basidia immersed about 30  $\mu$  below the surface of the hymenium, longitudinally septate, 16–21  $\times$  10–11  $\mu$ ; spores simple, hyaline, even, 12  $\times$  4–5  $\mu$ .

Fructification resupinate over an area 4 cm. long, 1½ cm. wide, and broken off at both ends; the reflexed portion 2 mm. broad.

On bark of a decaying, frondose limb. Mexico. December.

*E. mexicana* is related to *E. alliciens* but is thicker, browner above, with branched paraphyses bearing granules, and with larger spores.

Specimens examined:

Mexico: Guernavaca, W. A. & E. L. Merrill, 399, type (in Mo. Bot. Gard. Herb., 54547, and N. Y. Bot. Gard. Herb.).

## SEBACINA

*Sebacina* (?) Cokeri Burt, n. sp.

*Sebacina* sp. Coker, Elisha Mitchell Scientif. Soc. Jour. 35: 157. pl. 47, 61, f. 1–5. 1920.

Type: in Univ. of North Carolina Herb. and Mo. Bot. Gard. Herb.

“Forming low, crowded and anastomosing, nodulated masses and pustules looking very like a Myxomycete; patches 9 cm. or more long and up to 1.5 cm. wide in our collection (probably quite indefinite as to size and form of area covered); height only up to

1 or 1.5 mm.; color a pallid creamy yellow or dusky cream; surface glabrous, shining unless getting rather dry. Texture succulent but not gelatinous in the usual sense, but firmly waxy. Fibers of the flesh slender and regular, about  $1.5\text{--}2\ \mu$  thick, sparingly branched.

"Spores oval, flattened on one side, yellowish under microscope, very variable in size,  $6.3\text{--}9 \times 7.7\text{--}12.2\ \mu$ , sprouting into threads by one or two germ tubes, which may arise at any point. Basidia oval,  $13.7\text{--}14.4 \times 16.3\ \mu$ , irregularly four-celled, collapsing soon after formation of spores. Sterigmata much thickened upward, some very long and slender. Paraphyses slender, densely packed, curved over, and mostly branched a little at the ends, the branches crooked and rhizoid-like and more slender and set with very minute crystals. Much larger, roughly globular or angular crystals with slender, spine-like, hyaline projections also occur rather abundantly through the hymenium; they are mostly about  $7\text{--}9\ \mu$  thick.

"This species is markedly distinct from all others we have seen. The peculiar color, pustulate, anastomosing form and plump spores and large crystals separate it easily from our other *Sebacinas*. The projections on the crystals do not seem to be of the same nature and after drying reappear very obscurely if at all. They may be the stubs of hyphae that took part in the formation of the crystals. So thickly interwoven are the tips of the paraphyses and so dense the little crystals that there is formed a distinct and darker crust over the surface."

The thickest portion of the fructification has dried Dresden brown.

Specimens examined:

North Carolina: Chapel Hill, on under side of old, hard heart of an oak branch, February, *W. C. Coker*, 4116, type (in Mo. Bot. Gard. Herb., 56719).

*S. fibrillosa* Burt, n. sp.

Type: in Mo. Bot. Gard. Herb. and N. Y. Bot. Gard. Herb.

Fructifications effused, incrusting, adnate, rather thin, fibrillose-hypochnoid, drying whitish, somewhat velutinous, surface irregular and conforming to the elevations and depressions of the

surface upon which growing, the margin somewhat fimbriate; in section 200–400  $\mu$  thick, not colored, composed of densely interwoven, hyaline hyphae about  $2\frac{1}{2}$   $\mu$  in diameter, with the wall gelatinously modified, much foreign matter present; cystidia not incrustated, cylindric, obtuse,  $3\frac{1}{2}$ –7  $\mu$  in diameter, protruding up to 30  $\mu$ ; basidia longitudinally septate, pyriform,  $15 \times 9$   $\mu$ , present in the surface of the hymenium; spores simple, hyaline, curved,  $7-8 \times 3\frac{1}{2}-4$   $\mu$ , copious.

Fructification 3 cm. long, 2 cm. wide.

Running over wood humus on the forest floor at 7000 feet altitude. Mexico. December.

*S. fibrillosa* is a small, whitish, incrusting species running over the irregular surface of wood humus. Its distinguishing character is the presence of cystidia, which are conspicuous and as distinct as in a *Peniophora*, and locate this species in the subgenus *Heterochaetella* of *Sebacina*.

Specimens examined:

Mexico: Tepeite River region, near Guernavaca, W. A. & E. L. Murrill, 515, type (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 54514).

*S. lactescens* Burt, n. sp.

Type: in Mo. Bot. Gard. Herb. and Farlow Herb.

Fructifications effused, rather thick when moist, thin when dry, gelatinous, separable, loosely attached, drying between drab and wood-brown, even, the margin thinning out; in section 1000  $\mu$  thick, not colored, composed of densely arranged, ascending and interwoven hyphae with walls so completely modified gelatinously that only the protoplasmic contents of the lumen can be followed; gloeocystidia somewhat colored, clavate,  $54 \times 5-7\frac{1}{2}$   $\mu$ , abundant in the hymenium; basidia longitudinally cruciately septate,  $15 \times 12$   $\mu$ , immersed about 25–35  $\mu$  below the surface of the hymenium; spores hyaline, even, curved,  $12 \times 6$   $\mu$ .

Fructifications 2 cm. long,  $\frac{1}{2}$ –1 cm. wide.

Longitudinally confluent on the under side of a frondose limb. West Indies.

*S. lactescens* may be recognized by its wood-brown color when dry, gelatinous consistency, and numerous and conspicuous,

slightly colored gloeocystidia. The latter locate this species in the subgenus *Bourdotia* of *Sebacina*.

Specimens examined:

Grenada: Grant Etang, *R. Thaxter*, comm. by W. G. Farlow, 153, type (in Mo. Bot. Gard. Herb., 55236).

*S. plumbescens* Burt, Mo. Bot. Gard. Ann. 3: 241. 1916.

*S. plumbea* Burt, Mo. Bot. Gard. Ann. 2: 765. text f. 6, pl. 27, f. 20. 1915, but not of Bresadola & Torrend, Broteria 11: 87. f. 8. 1913.—*S. Burti* Trotter in Sacc. Syll. Fung. 23: 573. 1925.

*S. murina* Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructifications effused, closely adnate, very thin, pallid mouse-gray and somewhat pulverulent when dry, even, the margin similar; in section  $30\ \mu$  thick, not colored, composed chiefly of longitudinally septate basidia starting almost directly from the substratum,  $15 \times 8\ \mu$ , and of immersed, white, incrusting masses up to  $25 \times 7\ \mu$  as seen in lactic acid preparations, densely covered with spiculose granules which clothe a short, cylindric, flexuous, hyphal axis for each mass; spores simple, hyaline, even,  $9 \times 6\ \mu$ .

Fructifications 5–6 cm. long,  $1\frac{1}{2}$ –2 cm. wide.

On decorticated, weathered, badly decayed wood on mountain side at altitude 800–1500 feet. Mexico. January.

*S. murina* is noteworthy by the small, erect, cylindric, incrusting, white masses between its basidia. These masses are evidently homologous with the paraphyses of *S. calcea* but differ from the latter by being unbranched, as shown when their spiculose, incrusting matter is cleared away by potassium hydrate solution; the central axis of each mass then becomes visible as a cylindric, flexuous rod somewhat olivaceous in color in preparations stained with eosin and very similar in appearance then to the organs termed gloeocystidia by Bourdot & Galzin in the subgenus *Bourdotia* of *Sebacina*.

Specimens examined:

Mexico: Motzorongo, near Cordoba, *W. A. & E. L. Merrill*, 986, type, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54609).

*S. polyschista* Berk. & Curtis, n. sp., in herb. under *Corticium*.  
Type: in Farlow Herb. and probably in Kew Herb.

Fructifications effused, rather thin, loosely attached to the substratum, separable, fleshy, avellaneous in the herbarium, even, cracking in drying and showing through the cracks the whitish, fibrous subiculum, the margin thinning out, whitish, arachnoid; in section 400–500  $\mu$  thick, slightly colored, with the hyphae near the substratum loosely interwoven, thick-walled,  $4\frac{1}{2}$ –6  $\mu$  in diameter, not nodose-septate, not incrustated, and with the hymenial layer 200  $\mu$  thick, composed of densely interwoven hyphae 3  $\mu$  in diameter; no cystidia; basidia cylindric, apparently longitudinally septate, at the surface of the hymenium; spores hyaline, even, curved,  $10 \times 4\frac{1}{2}$   $\mu$ .

On under side of limb of dead *Pyrus Malus*. South Carolina. July.

This species should be recognized by the avellaneous color of its fructifications which shrink greatly and crack in drying. It is related to *S. adusta*.

Specimens examined:

South Carolina: Society Hill, M. A. Curtis, 4950, type (in Farlow Herb.).

*S. Sheari* Burt, Mo. Bot. Gard. Ann. 2: 758. text f. 2. 1915.

This species was transferred to the genus *Heterochaete*, in Mo. Bot. Gard. Ann. 8: 377. 1921, under the name *Heterochaete Sheari* Burt.

#### EXOTIC SPECIES

*S. africana* Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructifications effused, closely adnate, thin, fleshy-gelatinous, drying cartridge-buff, contracting in drying and cracking, even, not shining, the margin not present; in section 240  $\mu$  thick, not colored, composed of suberect, densely arranged hyphae with walls gelatinously modified, somewhat granule-incrustated; gloeocystidia not colored, flexuous,  $75 \times 4$ –6  $\mu$ , confined to the hymenial region between the basidia; basidia pyriform, at the surface of the hymenium; spores simple, hyaline, curved,  $6$ – $7\frac{1}{2} \times 3$   $\mu$ .

Fructifications probably large, for specimen received is 9 cm. long, about 1 cm. wide, and broken off on all sides.

On decorticated, rotten, frondose log. South Africa. January.

*S. africana* resembles in aspect *Corticium ochraceum* but is a *Sebacina* in structure. It is further distinguished by its buff color, sparingly granule-incrusted, gelatinous-walled hyphae, small spores, and colorless, flexuous gloeocystidia which are in all respects like those present in some species of *Corticium* and *Peniophora*. The gloeocystidia locate *S. africana* in the sub-genus *Bourdotia* of *Sebacina*.

Specimens examined:

South Africa: Knyna, Cape Colony, *P. A. van der Bijl*, 1342, type (in Mo. Bot. Gard. Herb., 63405).

#### TREMELLODENDRON

***Tremellodendron simplex*** Burt, Mo. Bot. Gard. Ann. 2: 742. pl. 26, f. 5. 1915.

Another collection of this species, affording a more accurate description, consists of 2 infundibuliform fructifications with black, rugose, compressed stems; the pilei are olive-buff, even, glabrous; hymenium inferior, testaceous, with the margin olive-ocher.

Fructifications 3 cm. high; stem 2 cm. long,  $1\frac{1}{2}$  mm. in diameter; pileus 1 cm. in diameter, about 1 cm. long.

This gathering was made at El Yunque, Cuba, in March, 1903, by *Underwood & Earle*, 1087A, and is now in N. Y. Bot. Gard. Herb.

***T. tenax*** (Schw.) Burt, Mo. Bot. Gard. Ann. 7: 67. pl. 11, f. 105, 106. 1922.

*Clavaria tenax* Schweinitz, Am. Phil. Soc. Trans. N. S. 4: 182. 1832.—*Merisma tenax* (Schw.) Lévillé, Ann. Sci. Nat. Bot. III. 5: 157. 1846.—*Pterula tenax* (Schw.) Sacc. Syll. Fung. 6: 742. 1888.—*Tremellodendron Hibbardi* Lloyd, Myc. Writ. 6. Myc. Notes 65: 1049. pl. 179, f. 1947. 1921.

Type: in Schweinitz Herb. and a fragment in Farlow Herb.

Fructifications fascicled, with substance very tough, at length somewhat horn-like, soon ramose-divided from the base; branches

compressed, dilated at the apex into almost a membrane; branchlets minute, irregularly extended and then fimbriate. Color alutaceous red. Does not exceed an inch in height.

The specimen in Schweinitz Herb. is compressed, not fleshy when moistened, and has the hymenium fuscous; basidia longitudinally septate; spores hyaline, even, flattened on one side,  $9 \times 5\frac{1}{2} \mu$ . *T. tenax* has somewhat the aspect of some forms of *T. pallidum* but is readily separable from the latter by the very dark hymenium of *T. tenax*.

Specimens examined:

Massachusetts: West Roxbury, *Miss A. Hibbard*, under the name *T. Hibbardi* (in Mo. Bot. Gard. Herb., 58736).

Pennsylvania: Bethlehem, *Schweinitz*, type (in Herb. Schweinitz and Farlow Herb.).

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